

Fig. 1. *Theonella swinhoei*, nat. size.
 2. Network of ditto, magnified.
 3. Fusiform spicules of ditto, magnified.

THEONELLA SWINHOEI.

B.M.

Sponge thick, short, cup-shaped; base broad, expanded; the cup shallow, with a very thick edge; the outer surface covered with a rather smooth crustaceous coat, without any appearance of oscules.

Hab. Formosa (*Swinhoe*).

November 26, 1868.

Dr. Edward Hamilton, V.P., in the Chair.

Mr. P. L. Sclater called attention to the following recent noticeable additions to the Society's Menagerie:—

1. A female European Bison (*Bos bison*), bred in the Gardens of the Zoological Society of Amsterdam, and received in exchange from that Society November 6th.

2. A Monkey of the genus *Macacus*, deposited by Major C. Richards, of the Bengal Staff Corps, November 9th, having been captured at Dalamcote Fort, Bhootan, in December 1863. This animal appeared to be the *Macacus assamensis*, very shortly described by M'Clelland in his "List of Mammalia and Birds collected in Assam," in the Society's 'Proceedings' for 1839, p. 148. Whether it was the *Pithex oinops* or *P. pelops* of Hodgson (J. A. S. B. ix. p. 1212) could only be determined by an accurate examination of the animal when dead, and comparison of it with Hodgson's type specimens. It seemed, at all events, judging from the living animal,

to be specifically distinct from the common *Macacus rhesus*, having a pale flesh-coloured face, and longer, smaller, and much less densely furred tail.

3. Two White American Cranes (*Grus americana*), purchased of the Zoological Society of Antwerp, and received November 12th and 19th. These birds were in the brown immature plumage, in which stage they were not unlike the young of *Grus montignesia*, figured in the Society's 'Proceedings' for 1861, p. 369. Mr. Selater remarked that the acquisition of this species raised the number of representatives of the family *Gruidæ* now or lately in the Society's Gardens to twelve in number, viz. :—

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| 1. <i>Grus montignesia</i> . | 7. <i>Grus canadensis</i> . |
| 2. ——— <i>americana</i> . | 8. ——— <i>carunculata</i> . |
| 3. ——— <i>cinerea</i> . | 9. <i>Tetrapteryx paradiseus</i> . |
| 4. ——— <i>leucogeranus</i> . | 10. <i>Balearica pavonina</i> . |
| 5. ——— <i>antigone</i> . | 11. ——— <i>regulorum</i> . |
| 6. ——— <i>australis</i> . | 12. <i>Anthropoides virgo</i> . |

The only two well-determined species wanted to complete the series were *G. vipio* and *G. monachus* of Japan, of which the Society had never yet succeeded in acquiring specimens.

Mr. Selater also remarked on the great difference in size between the two specimens of *G. canadensis* lately living in the Gardens, and stated his opinion that it was probably on a small specimen of this bird that Mr. Cassin had established his *Grus fraterculus*.

Mr. Selater also called the attention of the Meeting to the two Eleonora Falcons (*Falco eleonoræ*) presented to the Society's collection by Capt. Thomas Waite on the 7th of October, and stated that, in reply to inquiries, Capt. Waite had favoured him with the following account of the exact locality in which these birds were procured :—“ I found these Falcons on the Island of Mogador. It is a very curious place ; and there are properly two islands and several detached rocks, but the whole extent is only about one-fourth by three-fourths of a mile. In height it does not exceed 100 feet ; and about half of it is very steep and craggy, and the rocks curiously honeycombed and forming natural holes and ledges, in which thousands of birds build and sleep—some sea-birds and Martins, but principally Pigeons. The favourite place with the birds is what we call the little island, which is nearly round, about 90 feet high and about one-fourth of a mile in diameter. When you get to the top you find it a mere shell, the centre being an immense basin, with perpendicular sides, a large archway at the north and south ends, through which the sea flows, and at high water you can get a boat inside. There is no water on the island, and the Pigeons go to the mainland in the daytime ; but I do not think the Falcons ever leave it.”

The following papers were read :—

1. On Peruvian Birds collected by Mr. Whitely. By P. L. SCLATER, M.A., Ph.D., F.R.S., and OSBERT SALVIN, M.A., F.L.S.—Part III.*

A third small collection recently received from Mr. Whitely contains specimens obtained in the vicinity of Arequipa early in the present year. Mr. Whitely has now left the western coast-region, and, at the date of his last letters, was at Tinta, on a branch of the Vilcama-yu south-east of Cusco, whence he was intending to penetrate into the hot valley of Santa Ana, lower down the same stream.

The following species from Arequipa are contained in this collection:—

1. ANTHUS RUFUS.

See our remarks *anteà*, p. 173.

2. ATTICORA CYANOLEUCA.

See P. Z. S. 1867, p. 984.

3. PHRYGILUS PLEBEIUS, Tsch. F. P. *Aves*, p. 219, t. 19. fig. 1.

A pair of this *Phrygilus*, of which the female seems to be figured in the 'Fauna Peruana.' The species is closely allied to Sclater's *P. ocularis* (P. Z. S. 1858, p. 450), from Ecuador, but is distinguishable by its larger size, smaller bill, more distinct markings above, white colour below, and *black* tarsi. We may remark that Tschudi describes the tarsi as *brown*, but in both Mr. Whitely's skins they are black. Tschudi gives no exact locality for his species.

4. PHRYGILUS ALAUDINUS (Kittl.).

A nest of this species, taken near Arequipa in March, is in Mr. Whitely's collection. The nest is described as "made of coarse grass, lined with finer grass, and placed on the ground in fields of lucerne." The eggs, which have been already described by Mr. Yarrell (P. Z. S. 1843, p. 113), are very like those of our Yellow-Hammer (*Emberiza citrinella*).

5. SYCALIS CHLORIS, Cab. in Tsch. F. P. *Aves*, p. 216.

Two males, apparently of this species, which is nearly allied to *S. aureiventris* and *S. luteocephala*, but appears distinct from either.

6. MUSCISAXICOLA MACULIROSTRIS (Lafr. et d'Orb.).

Two examples of this species, which was originally obtained by d'Orbigny near La Paz in Bolivia.

7. ELAINEA ALBICEPS.

See *anteà*, p. 174.

8. THAUMASTURA CORA.

The nest of this species was taken near Arequipa, March 18th. It was placed in a prickly cactus.

* See Part I., P. Z. S. 1867, p. 982, and Part II., P. Z. S. 1868, p. 173.

9. RHODOPIS VESPERA.

The nest of this Humming-bird was also taken in March last, placed, like that of the last species, in a cactus.

10. ANTROSTOMUS ÆQUICAUDATUS.

Two skins of this species, concerning which see remarks, P. Z. S. 1867, pp. 342, 987.

11. CYPSELUS ANDICOLA (Lafr. et d'Orb.); d'Orb. Voy. Ois. p. 358, t. 42. fig. 2; Sclater, P. Z. S. 1865, p. 606.

Several skins of this highly interesting Swift, which we had only before seen in the British Museum.

Mr. Whitely having now left the western slope of the Andean range, it may be convenient to give a nominal list of species he has obtained in Western Peru, which are, altogether, eighty-three in number:—

I. PASSERES.

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| 1. <i>Turdus chiguanco.</i> | 28. <i>Muscisaxicola albifrons.</i> |
| 2. <i>Troglodytes tessellatus.</i> | 29. ——— <i>mentalis.</i> |
| 3. <i>Anthus rufus.</i> | 30. ——— <i>rubricapilla.</i> |
| 4. <i>Hirundo andicola.</i> | 31. ——— <i>maculirostris.</i> |
| 5. <i>Atticora cyanoleuca.</i> | 32. <i>Centrites niger.</i> |
| 6. <i>Conirostrum cinereum.</i> | 33. <i>Elainea albiceps.</i> |
| 7. <i>Diglossa brunneiventris.</i> | 34. <i>Myiobius rufescens.</i> |
| 8. <i>Tanagra darwini.</i> | 35. <i>Pyrocephalus rubineus.</i> |
| 9. <i>Pheucticus chrysogaster.</i> | 36. <i>Anæretes albocristatus.</i> |
| 10. <i>Spermophila telasco.</i> | |
| 11. <i>Volatinia jacarina.</i> | II. PICARIÆ. |
| 12. <i>Phrygilus atriceps.</i> | 37. <i>Ceryle cabanisi.</i> |
| 13. ——— <i>fruticeti.</i> | 38. <i>Antrostomus æquicaudatus.</i> |
| 14. ——— <i>alaudinus.</i> | 39. <i>Chordeiles peruvianus.</i> |
| 15. ——— <i>plebeius.</i> | 40. <i>Cypselus andicola.</i> |
| 16. ——— <i>speculifer.</i> | 41. <i>Oreotrochilus estellæ.</i> |
| 17. <i>Xenospingus concolor.</i> | 42. <i>Myrtis francescæ.</i> |
| 18. <i>Zonotrichia pileata.</i> | 43. <i>Thaumastura coræ.</i> |
| 19. <i>Chrysomitris capitalis.</i> | 44. <i>Rhodopis vesper.</i> |
| 20. <i>Sycalis chloris.</i> | 45. <i>Metalura cupreicaudu.</i> |
| 21. <i>Sturnella bellicosa.</i> | 46. <i>Petasophora iolata.</i> |
| 22. <i>Geositta cunicularia.</i> | 47. <i>Patagona gigas.</i> |
| 23. <i>Cinclodes fuscus.</i> | 48. <i>Crotophaga sulcirostris.</i> |
| 24. ——— <i>nigrifumosus.</i> | 49. <i>Bolborhynchus orbignesi</i> .* |
| 25. <i>Synallaxis ægithaloides.</i> | III. ACCIPITRES. |
| 26. ——— <i>orbignii.</i> | 50. <i>Cathartes aura.</i> |
| 27. <i>Octhoëca leucophrys.</i> | 51. <i>Milvago megalopterus.</i> |

* The specimen determined (P. Z. S. 1867, p. 988) as probably *Conurus aurifrons* jr., is considered by Dr. Finsch, to whom it has since been shown, to belong to this species (cf. Finsch, Papag. ii. p. 129).

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| 52. <i>Urubitinga uncinata.</i> | 66. <i>Charadrius virginicus.</i> |
| 53. <i>Buteo erythronotus.</i> | 67. <i>Ægialites vociferus.</i> |
| 54. <i>Hypotriorchis femoralis.</i> | 68. — <i>nivosus.</i> |
| 55. <i>Tinnunculus sparverius.</i> | 69. <i>Oreophilus ruficollis.</i> |
| 56. <i>Circus poliopterus.</i> | 70. <i>Thinocorus runicivorus.</i> |
| 57. <i>Strix perlata.</i> | 71. — <i>orbignyianus.</i> |
| 58. <i>Glaucidium infuscatum.</i> | 72. <i>Calidris arenaria.</i> |
| 59. <i>Pholeoptynx cunicularia.</i> | 73. <i>Tringa bairdi.</i> |
| | 74. <i>Numerius hudsonicus.</i> |
| | 75. <i>Rallus rythirhynchus.</i> |
| | 76. <i>Gallinula galeata.</i> |
| | 77. <i>Fulica ardesiaca.</i> |

IV. COLUMBÆ.

60. *Zenaida auriculata.*
 61. *Metriopelia aymara.*
 62. *Chamæpelia erythrothorax.*
 63. — *cruziana.*

V. GALLINÆ.

64. *Tinamotis pentlandi.*

VI. GRALLÆ.

65. *Ædicnemus superciliaris.*

VII. ANSERES.

78. *Anas cristata.*
 79. *Querquedula oxyptera.*
 80. *Erismatura ferruginea.*
 81. *Podilymbus antarcticus.*
 82. *Larus bonapartii.*
 83. — *belcheri.*

The most complete account yet given of the fauna of Western Peru is that of Tschudi, who, in his 'Fauna Peruana,' includes 101 species as inhabiting the three zones of elevation into which he divides the western slope of the Andes. Mr. Whitely's series, however, is sufficiently perfect to enable us to point out shortly some of the more salient features of this peculiar fauna, as compared with that of the corresponding eastern slope of the same range. These are:—

1. The extreme poverty of the avifauna in species—particularly in the Passeres and higher groups.

2. The entire absence of the great forest-loving families Formicariidæ, Cotingidæ, Galbulidæ, Momotidæ, Bucconidæ, Trogonidæ, Ramphastidæ, Capitonidæ, and Cracidæ, which form such characteristic features of the ornithology of every part of Eastern Tropical America.

3. The almost entire absence of the families Tanagridæ, Dendrocolaptidæ, Picidæ, and Psittacidæ, which are, for the most part, of similar habits. The Tanagridæ, so numerous in most parts of Tropical America, are represented by three or four species in Western Peru, the Dendrocolaptidæ by seven or eight species belonging mostly to peculiar genera. One Woodpecker (*Colaptes rupicola*) only is to be met with, and but two Parrots.

4. The most characteristic genera of this fauna are, perhaps, *Phrygilus*, *Xenospingus*, *Cinclodes*, *Muscisaxicola*, *Centrites*, *Muscigralla*, *Thinocorus*, and *Oreophilus*. Of these, *Xenospingus* and *Muscigralla* are monotypic forms peculiar to the district, whilst the remainder, with scarcely an exception, belong strictly to the Patagonian province of the Neotropical region, ranging, however, in many instances northwards along the higher plateaux of the Cordillera into New Granada, and affecting a greater elevation as they advance.



J. Gould del.

M. & N. Hanhart imp.

HYPOCNEMIS HYPOXANTHA

2. Descriptions of some New or little-known Species of Formicarians. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plate XLIII.)

Having lately had occasion to look carefully through the specimens of Formicariidæ in my collection in order to identify some of the species described in the second part of Herr von Pelzeln's 'Ornithologie Brasiliens,' I have found amongst them examples of five well-marked species which appear to have been hitherto unnoticed, and of which I subjoin the descriptions, together with that of a species which seems to constitute a new genus in the family. These are:—

1. THAMNOPHILUS NIGRICEPS.

Supra brunneo-rufescens, interscapulio, alis extus et cauda tota saturate rufis; dorsi plumis laxis, elongatis, usque ad mediam caudam protensis, ad basin cinereis, juxta apicem rufescentibus: capite toto cum gutture et pectore nigris, plumarum scapis in pileo angustissime, in corpore inferiore latius, albo strigatis: subtus medio sicut pectus striato: remigum marginibus internis cum subalaribus pallide fulvis: rostro nigricanti-plumbeo, pedibus fuscis: long. tota 6·0, alæ 3·0, caudæ 2·75, rostri a rictu 0·8, tarsi 0·9 (poll. Angl. et dec.).

Hab. in Nova Granada int.

Mus. P. L. S.

The single specimen of this bird in my collection was obtained out of a collection of Bogotá skins, and presented to me by Mr. Osbert Salvin. It is a small, rather weakly formed species, about the size of *Th. doliatus*, and but for its long tail might almost go with *Dysithamnus*. In colouring it is not very like any other known species, but is readily distinguishable by its black head and breast which are marked with white shaft-spots, and rufous wings and tail. The fourth, fifth, sixth, and seventh primaries are nearly equal and largest.

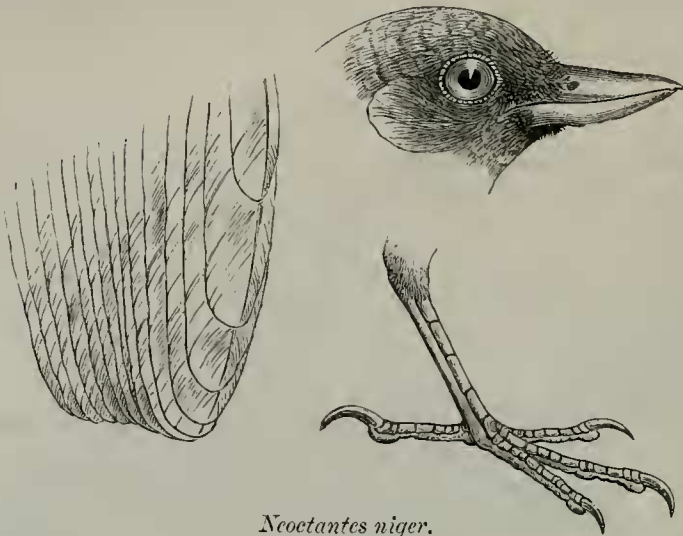
2. NEOCTANTES NIGER.

Xenops niger, Natt. MS.: Pelzeln, Sitz. K. Akad. Wiss. xxxiv. p. 111.

Pteroptochus niger, Pelzeln, Orn. Bras. p. 46.

This singular bird was originally described by Herr von Pelzeln as a *Xenops*, under the designation which it had received in Natterer's MS. In his recently published 'Ornithologie Brasiliens,' Herr von Pelzeln has removed it to the genus *Pteroptochus*; but a glance at the structure of the nostrils (which have no traces of the characteristic operculum of the Pteroptochidæ) is sufficient to show that this is not its natural position. For myself, I believe that it may be correctly removed to the *Thamnophilinæ*, with which it agrees in general structure, but that it must stand as the type of a new

genus in the neighbourhood of *Thamnistes*, which I propose to call *Neotantes**.



Neotantes niger.

Neotantes genus novum *Thamnophilinarum*. *Habitus generalis* *Thamnophili*, sed *rostro compresso, subrecurvato differt*. *Nares patulæ*. *Culmen rectum, subdescendens, ad apicem paulum incurvum*. *Tomiarum linea parum ascendens*. *Gonys recurvus fortiter ascendens*. *Alæ breves, remigibus quinto sexto et septimo inter se fere æqualibus et longissimis*. *Pedes sicut in speciebus minoribus generis Thamnophili*.

Typus et species unica *N. niger*.

♂. *Ater unicolor: macula magna interscapulii celata alba: dorsi plumis laxis elongatis, ad basin nigricanti-cinereis: alis caudaque intus fusciscentibus, rectricum fasciis obsoletis vix apparentibus: rostro plumbeo, mandibula inferiore partim albicante, pedibus nigris: long. tota 6·0, alæ 2·9, caudæ 2·4, rostri a rictu 0·8, tarsi 0·9.*

♀. *Mari similis, sed magis in schistaceum vergens, pectore cinnamo-meo-rufa: plumis dorsi et pectoris ad basin griseo-albis; remigibus ultimis et rectricibus fasciis obscurioribus transversis, parum conspicuis, notatis.*

Hab. Marabitanas, Rio Negro (*Natterer*).

Mus. Vindob. et P. L. S.

My collection contains a single imperfect skin of the male of this rare bird, received in exchange from the Vienna Museum. *Natterer* appears to be the only collector that has ever met with it.

3. CERCOMACRA NAPENSIS.

Cercomacra cinerascens, *Sclater*, P. Z. S. 1858, p. 245, et Cat. A. B. p. 184 (*err.*).

Cinerea unicolor, alis caudaque nigricantioribus, tectricibus alarum

* νέος (*novus*), et κέρντης (*occisor*).

et remigum marginibus externis dorso concoloribus: macula interscapulii celata et reetricum lateralium apicibus angustis albis; tetricibus subalaribus pallide cinereis: rostro nigro mandibula ad basin albicante, pedibus nigris: long. tota 5·5, alæ 2·6, caudæ 2·6, rostri a rictu 0·9, tarsi 0·8.

Hab. ad ripas fl. Napo, reipublicæ Æquatorialis.

Obs. A *Cercomacra cinerascens* alis omnino immaculatis et caudæ reetricibus angustius albis distinguenda.

Upon obtaining from Mr. E. Bartlett's collection specimens of the true *Cercomacra cinerascens* (which I had originally described, P. Z. S. 1857, p. 131, from skins in the British Museum) I at once recognized their complete distinctness from the present bird, and assigned to the latter the MS. name *napensis**. I have since purchased of a dealer a second example of this species, which by its make appears to be from Cayenne.

The absence of white markings on the wings will serve to distinguish this bird, not only from *C. cinerascens*, but also from its other allies, *C. cærulescens* and *C. tyrannina*.

4. HYPOCNEMIS HYPOXANTHA. (Plate XLIII.)

Supra olivacea; capite nigro, striga verticali elongata alba; loris et superciliis ad nucham productis flavis: alarum tetricibus nigris albo terminatis; cauda olivacea, reetricum apicibus nigricantibus albo terminatis; subtus sulphureo-flava, gutturis et pectoris lateribus parce nigro striolatis, hypochondriis virescentibus: rostro nigro, pedibus fuscis: long. tota 4·2, alæ 2·1, caudæ 1·7, rostri a rictu 0·7, tarsi 0·8.

Hab. in Amazonia superiore.

Mus. P. L. S.

Obs. Proxima *H. flavescens*, sed superciliis et corpore toto subtus sulphureo-flavis dignoscenda.

Of this well-marked species of *Hypocnemis* I have lately acquired a single specimen from a French dealer. Its colouring above closely resembles that of *H. flavescens* (Sclater, P. Z. S. 1864, p. 609); but the lengthened superciliaries are bright yellow like the breast, and the present bird has no trace of rufous on the flanks and belly. M. Jules Verreaux tells me that this species was obtained by D'Orbigny during his Bolivian travels; but it does not appear to have been noticed in the ornithology of that author's well-known 'Voyage.'

5. HETEROCNEMIS SIMPLEX.

Nigricanti-schistacea, alis caudaque fusco-nigricantibus, alarum tetricibus maculis parvis rotundis albis terminatis; subtus schistacea unicolor, medialiter paulo dilutior: rostro nigro, pedibus pallide fuscis: long. tota 6·2, alæ 2·7, caudæ 2·2, rostri a rictu 1·0, tarsi 1·1.

Hab. in Surinamo, ad ripas fl. Maroni (*C. Bartlett*).

I have a single indifferent skin of this Ant-Thrush, for which I

* Cf. P. Z. S. 1866, p. 186.

have long tried in vain to find a published description. It was obtained along with other birds by Mr. Clarence Bartlett, at Mr. Kappler's plantation on the Maroni River, Surinam, in 1866. It is rather a strongly built species, appearing to agree better with *Heterocnemis* than with any other genus, the divisions of the anterior scutes of the tarsus being quite obsolete. There are no traces of an interscapular spot.

I was at first inclined to think this might be the male of *Herpsilochmus argentatus* of Des Murs (*Myrmeciza*, sp. 1141 of my Catalogue), although it has a much longer tail. But it is certainly different from *Heterocnemis albiventris* of Pelzeln (Orn. Bras. p. 161), which Pelzeln supposes to be, and which probably is, the male of the bird in question.

6. CONOPOPHAGA GUTTURALIS.

Supra brunnescenti-olivacea, dorsi plumis quibusdam vix conspicue nigro marginatis: fasciculo postoculari albo: capite toto et corpore subtus ad imum pectus castaneis, plaga in gutture medio alba: ventre medio schistaceo, lateraliter olivaceo perfuso: rostro superiore nigro, inferiore flavo: pedibus corylinis: long. tota 4.5, alæ 2.8, caudæ 1.6, tarsi 1.1, rostri a rectu 0.8.

Hab. in Nov. Granada int.

I have a single "Bogotá" skin of this well-marked species, purchased of Mr. S. Stevens. In general aspect it comes nearest to *C. cucullata*, mihi (P. Z. S. 1856, p. 29, t. 119), which has a somewhat similar guttural spot; but that species has no postocular tuft, and a yellow bill. The present species has a white postocular tuft, as in *C. aurita*, and belongs to the first section of the genus as arranged P. Z. S. 1858, p. 284.

When I published my Catalogue of American Birds in 1862, my collection of Formicariidæ consisted of 280 skins referable to 145 different species. I have since added to it 101 skins, and have now 381 specimens belonging to 178 different species. The new species added since the catalogue was issued are:—

I. THAMNOPHILINÆ.

1. *Thamnophilus hollandi*, Lawr., ex Nicaragua.
2. *T. melanurus*, Gould, ex Peruv. orient.
3. *T. borbæ*, Pelz., ex fl. Madeira.
4. *T. cinereoniger*, Pelz., ex Rio Negro.
5. *T. luctuosus*, Licht., ex Pará.
6. *T. tschudii*, Pelz., ex fl. Madeira.
7. *T. murinus*, Sclater, ex Rio Negro.
8. *T. nigriceps*, Sclater, ex Nov. Granada int.
9. *T. tenuipunctatus*, Lafr., ex Æquat. et Nov. Granada.
10. *T. albicans* (Lafr.), ex Nov. Granada int.
11. *T. argentinus*, Cab., ex rep. Argentina.

12. *Neoctantes niger* (Pelz.), ex fl. Madeira.
13. *Dysithamnus schistaceus*, Lafr. et d'Orb.*

II. FORMICIVORINÆ.

14. *Myrmotherula fulviventris*, Lawr., ex Panama et rep. Æquat.
15. *M. hæmatonota*, Scl., ex Amazon. sup.
16. *M. cinereiventris*, Scl., ex Cayenna et Amazonia.
17. *M. unicolor*, Ménétr., ex Nov. Granada int.
18. *Formicivora strigilata*, Max., ex Brasil.
19. *Cercomacra cinerascens*, Sclater†, ex Peruv. orient.
20. *Percnostola fortis*, Scl. et Salv., ex Peruv. orient.

III. FORMICARIINÆ.

21. *Heterocnemis simplex*, Sclater, ex Surinam.
22. *Myrmeciza hemimelæna*, Scl., ex Amaz. sup.
23. *M. immaculata*, Scl. et Salv., ex Panama.
24. *Hypocnemis flavescens*, Scl., ex Rio Negro.
25. *H. hypoxantha*, Scl., ex Amaz. sup.
26. *H. melanura*, Scl. et Salv., ex Peruv. or.
27. *H. hemileuca*, Scl. et Salv., ex Peruv. or.
28. *Pithys bicolor*, Lawr., ex Panama.
29. *Phlogopsis macleanani*, Lawr., ex Panama.
30. *Formicarius hoffmanni*, Cab., ex Costa Rica.
31. *Pittosoma michleri*, Cassin, ex Panama.
32. *Grallaria hypoleuca*, Scl., ex Nov. Granad. int.
33. *G. perspicillata*, Lawr., ex Panama.
34. *Grallaricula costaricensis*, Lawr., ex Costa Rica.
35. *G. nana* (Lafr.), ex Nov. Granad. int.
36. *G. loricata*, Scl., ex Venezuela.
37. *Conopophaga gutturalis*, Scl., ex Nov. Granad. int.

3. Notes on the *Ceratelladæ*, a family of Keratose Sponges.

By DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., &c.

There have been in the British-Museum collection for several years two plant-like sea-animals that I do not think have been described, the delay having been partly caused by the difficulty that existed in determining to what group of animals, if they were animals, they ought to be referred. They were temporarily placed in the collection with the Gorgonoid Corals; but a very cursory examination showed that they did not belong to that group; and though the surface of the

* The species called by this name in my American Cat. (no. 1087) has been since named *D. ardesiacus*, P. Z. S. 1867, p. 756.

† The bird thus termed in my Catalogue is *C. napensis*, mihi, *suprà*, p. 572.

smaller branches and the cell-like projections on their surface were covered with spines, they could scarcely belong to the "*Alcyoniens armés*" of M. Milne-Edwards, and they at once differed from all the known forms of that group of animals by the skeleton being formed of horn.

One naturalist to whom I showed them declared that they must be plants belonging to the Algæ. But this cannot be the case; they have none of the characters, except the mere external form of Algæ; and their external form is as like to that of some corals as to any genus of Algæ that I am acquainted with.

In general appearance they combine with their plant-like form some characters of the spicular alcyonoid polypes, the texture of the very porous coral called *Porites*, and the horny consistence of the coarser horny sponges.

After very mature consideration, I am inclined to regard them, until their internal organization and growth is known, and the animal that forms them has been observed and described, as belonging to that very polymorphous group of animals which has been called Sponges. At the same time, I know no group of sponges with which they can be compared.

If they are sponges, they must be arranged with the keratose sponges; but, unlike all the known sponges of that group, they have a series of conical protuberances on the sides of the branchlets, which are developed as the branchlets grow in length, just as the cells of Alcyonoids and stony Madreporæ are developed by the budding of new cells from the bases of the last formed ones. The branches and these cells are all formed by the projecting terminations of the horny fibres.

The stem and older branches are formed of hard, horny, translucent fibres, of a nearly uniform cylindrical form, which are very closely united together into a horny network, with very small circular openings in all directions. This network is very like that found in the older parts of the genus *Porites* among the stony Madreporæ; but in that genus the network is hard and stony, in this it is hard, horny, and translucent. This hard horny network is very little softened by being soaked in water even for many hours.

The surface of the stem is either smooth and covered with a very large number of very minute, close, cylindrical canals, or with transverse ridges of a similar structure to the stem.

The upper branches and branchlets are chiefly composed of and covered with agglutinated, closely packed, projecting terminations of the horny fibres; and on the sides of the branches are placed, in a more or less regular manner, a number of small, short, conical or subcylindrical projections, formed of similar spiculum-like fibres, some of which project beyond the tips of the projections. These projections are placed on the side of the branchlet, which also terminates with a similar tuft of spines, the branchlet increasing in length by the development of new tufts or cells from the base of the old one.

The texture of the stem and branches would lead one to suppose that the entire coral or sponge is covered with sarcode or flesh in the living state, as in *Porites* and most sponges. True there is not the

slightest indication of such a covering to be observed in any of the specimens I have examined ; but that is also the case in the *Porites* and sponges that are generally found in collections.

The younger parts of these plant-like animals are formed of agglutinated, free, horny, projecting fibres, and the older parts of keratose network ; so that it is probable that, as part of the animal becomes old, or only required for the support of the young or more lately developed portion, the projecting portions become gradually transformed into a horny network.

I have not been able to discover, in the very cursory microscopic examination of these specimens which the state of my eyes will allow me to make, any appearance of aquiferous canals in the stem or branches, such as one might expect to exist if they are sponges, or if the prominences on the branches are oscules ; nor have I been able to observe any indications of any lamellar star-like cavities either in the prominences or cells on the branches, or in the substance of the stems or branches, which ought to be there if they are madreporic corals allied to *Porites*, even supposing that a horny coral does exist ; and a horny madreporic coral would be a very aberrant form. A sponge has been described under the name of *Darwinella* which is said to be made up of horny spicules ; but I have not seen this sponge, and do not know the remainder of its structure.

I have requested Mr. M. E. Cooke to undertake to examine the microscopic structure of these specimens, which the state of my eyes will not allow me to attempt. He states that he has not been able to discover any siliceous spicules.

The absence of any lacunæ in the structure of the stem or branches, or communication with the cell for the circulation of the water, which ought, according to the idea of its being a sponge, to be emitted by the cell-like oscules (and the regular development of the cell is much more like the budding of a fully developed polype than the growth of a Protozoon or sponge), leads one to doubt its proper arrangement with them. At the same time, the want of the cylindrical cells for the bodies of the actinoid polypes is equally repugnant to the idea of its being a horny madreporoid coral.

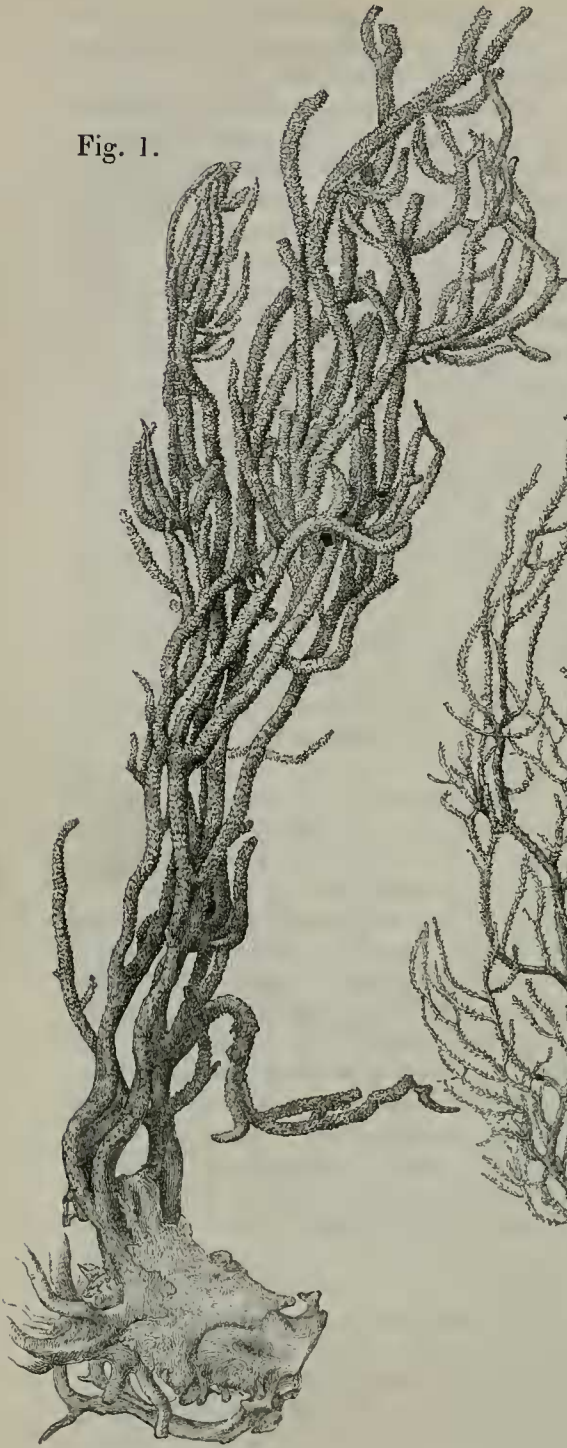
There can be no doubt that though the two specimens of these animals which I have examined are sufficiently different from each other in structure and growth to be regarded as belonging to two genera, yet they are so allied as to form a single family, which I propose to call CERATELLADÆ. The family may be characterized by the details which I have already given of their structure.

CERATELLA.

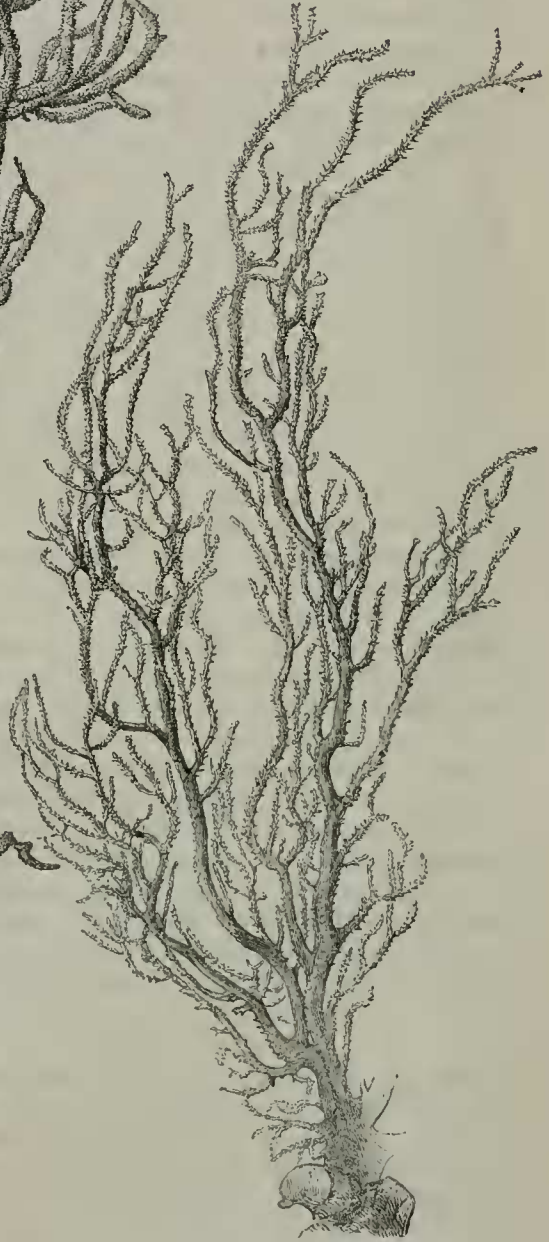
Sponge or coral irregularly dichotomously branched, more or less expanded on a plane from a single base ; of a dark brown colour, of a uniform, hard, horny substance ; stem hard, dark brown, solid ; base dilated, rather compressed, of a uniform rigid somewhat spongy texture, with a velvety surface, which is formed of an abundance of very minute, cylindrical, tortuous grooves. The branches and branchlets tapering, formed of a very large quantity of nearly parallel,

Fig. 1.

Fig. 2.



Dehitella atrorubens.



Ceratella fuscus.





LEUCOSTICTE GIGLIOLI

paler brown, projecting, horny points, divergent at the ends, and producing a spinulose surface. The branchlets tapering to a point, with a series of acute divergent tufts of spicules on each side (oscles or cells), with a small circular mouth below the produced acute outer edge of the tufts of spicules; one of the tufts is placed at the end of the branchlet, and the tufts seem to be produced at the base of the previously formed tufts.

CERATELLA FUSCA. (Fig. 2, p. 578.)

B.M.

Coral expanded, fan-shaped, forming an oblong frond; branches divergent from the base, with numerous lateral, subalternate, subdichotomous branches; similar but smaller lateral branchlets.

Hab. Australia, New South Wales, at the head of Bondy Bay.

2. DEHITELLA.

Sponge or coral dichotomously branched, expanded, growing on a large tuft from a broad, tortuous, creeping base, of a dark brown colour, and uniform hard rigid substance. Stem hard, cylindrical, opaque, smooth; branches and branchlets tapering to a point, cylindrical, covered with tufts of projecting horny spines on every side; those on the branches often placed in sharp-edged, narrow, transverse ridges; those of the upper branches and branchlets close but isolated, and divergent from the surface at nearly right angles.

This genus is distinguishable from *Ceratella* by the greater thickness and cylindrical form of the stem, by the more tufted and irregular manner of growth, and by the tufts of spicules (oscles or cells) being more abundant and equally dispersed on all sides of the branches and branchlets.

DEHITELLA ATRORUBENS. (Fig. 1, p. 578.)

B.M.

Hab. Australia?

4. Description of a New Species of the Genus *Leucosticte*.

By THOMAS SALVADORI, M.D., C.M.Z.S.

(Plate XLIV.)

LEUCOSTICTE GIGLIOLII, sp. nov. (Plate XLIV.)

Leucosticte fusco-purpurascens; pileo, gula et pectore fusco-griseo-sericeis; pilei ac pectoris plumis obscure marginatis; plumis nasalibus et regionibus ante et supra oculos rubescentibus; cervice sordide griseo-rufescente, dorso et scapularibus brunneis vix rubescente tinctis, uropygio magis rubro; supra-caudalibus nigricantibus apice obscure rubescentibus, ultimis nigris griseo tinctis; abdomine fusco-rufescente; subcaudalibus nigricantibus; alis nigricantibus, remigibus subtilissime rufescente limbatis, tectricibus alarum minoribus subtilissime rubro marginatis; subalaribus intense plumbeis; cauda nigri-

cante parum griseo tincta; rostro flavo, apice fusco; pedibus cum unguibus nigris.

Long. tot. 0^m·175, al. 0^m·113, caud. 0^m·078, rostri culm. 0^m·011, tarsi 0^m·020.

Hab. Dauria.

Mus. Turatiano Mediolani.

I have examined two specimens of this species. One is slightly less in its dimensions than those given above, and is rather darker both on its upper and on its under parts; the tail and upper tail-coverts are also more blackish.

This species has, in common with *L. arctoa*, the frontal feathers tinged with dark red; but it differs from it in not having the rectrices, remiges, upper and under tail-coverts white mixed with grey.

In its mode of coloration it is more nearly allied to *L. griseinucha*, *L. tephrocotis*, *L. brandti*, and more particularly to *L. brunneinucha*; but from all the above species it may at once be distinguished by the dark red colour of its frontal feathers.

I have named this bird after my friend Dr. Henry Giglioli, lately scientific officer on board the Italian frigate 'Magenta,' whose researches in divers branches of natural history will highly interest the scientific world.

With this one the known species of the genus *Leucosticte* will stand as follows—

<i>Leucosticte tephrocotis</i> , Sw.,	<i>L. hæmatopygia</i> (Gould),
<i>L. griseinucha</i> (Brandt),	<i>L. brandti</i> , Bp.,
<i>L. brunneinucha</i> (Brandt),	<i>L. arctoa</i> (Pall.);
<i>L. gigliolii</i> , mihi,	

while to the restricted genus *Montifringilla* are to be referred, with more propriety, the following three species:—

<i>Montifringilla nivalis</i> (L.).	<i>M. adamsi</i> , Moore.
<i>M. gebleri</i> (Brandt).	

Dr. F. Stoliczka, of the Geological Survey of India, has recently, in his "Ornithological Observations in the Sutlej Valley, N.W. Himalaya," p. 62 (Journ. As. Soc. Beng. xxxv. 1868), spoken of another species of *Montifringilla* (*Leucosticte*?) not yet described, which is only to be found in Ladak, and of which he possesses a single specimen.

5. Observations on Indian Fishes.

By FRANCIS DAY, F.Z.S., F.L.S.

During the last year I have abstained as much as possible from remarking upon the Cyprinidæ, being aware that Dr. Günther, F.R.S., was engaged upon this family. Having now received the seventh volume of his catalogue of the fishes of the British Museum, I propose offering some observations upon a few species apparently new. In doing this I shall follow the nomenclature adopted by

Dr. Günther for families and genera, confining my remarks to species.

Commencing with the genus *Barbus*, representatives of it exist in Southern India in almost every tank or river. These fishes are very valuable as food, though some are more bony than others. The various species termed "Mahseers" belong to this genus; a few of them attain a very large size.

In the Madras Presidency the following appears to be the relative economic value of the Barbels, subdividing them by the number, presence, or absence of their appendages. I have not perceived any variations in the species in this respect, except in the *Barbus neilli*, wherein one barbel was divided into three at its external extremity.

All or nearly all those fish having *four barbels* in the Madras Presidency, provided they are soberly coloured, and either have or are deficient in the lateral blotch, grow to a large size. The brilliantly coloured ones are mostly residents of mountain-streams, or of rivers contiguous to hills, and they are generally small.

Those with *two barbels* never grow to the large size attained by those with four. They are extensively distributed; and some, especially when living in mountain-streams, have brilliant colours.

Those *without barbels* are mostly of small size; some of them have a vivid coloration.

These facts are, or should be, important considerations in India with respect to stocking new pieces of water; for when large species are required those which have four barbels should be selected, irrespective of the consideration as to whether they have a serrated or smooth dorsal spine.

In the Madras Presidency the "Tamil" name for a Carp is "Candee meen" or "Carpfish," but with numerous prefixes to it, differing in different localities, in fact changing about as the thought strikes the native who is being interrogated. Thus the *Barbus (Leuciscus) filamentosus*, Cuv. & Val., having a red tail, is called "Saal Candee" or "red-tailed Carp;" the *Chela*, from its brilliant white colour, the "Vella Candee" or "white Carp;" the *Barilius*, from living in rivers, the "Aart Candee" or "river Carp." Having premised this, which shows the general inaccuracy of native names, I have still, however, given them when obtained; but their designations are more generic than specific, or, rather, more family ones than either.

BARBUS NEILLI, sp. nov.

B. iii. D. $\frac{4}{5}$. P. 15. V. 10. A. $\frac{3}{5}$. L. l. 24-26. L. tr. $\frac{4\frac{1}{2}}{4}$.

Length of specimens from 4 to 36 inches.

Length of head $\frac{2}{9}$, of pectoral $\frac{1}{6}$, of base of dorsal $\frac{1}{9}$, of base of anal $\frac{1}{11}$, of caudal $\frac{1}{5}$ of the total length. Height of head $\frac{1}{7}$, of body $\frac{1}{3}$, of dorsal fin $\frac{1}{11}$, of ventral $\frac{1}{7}$, of anal $\frac{1}{11}$ of the total length.

Eyes nearly circular, upper margin near the profile; diameter from $\frac{2}{9}$ to $\frac{1}{5}$ of length of head, $1\frac{1}{2}$ diameter apart and the same distance from end of snout.

Head slightly pointed and compressed at the snout.

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Cleft of mouth extending but little more than half the distance to beneath the anterior margin of the orbit, but the posterior extremity of the maxilla to nearly below the same margin. Lower jaw slightly the shortest. Nasal barbels extend to the anterior margin of the orbit; the maxillary barbels are equal to $1\frac{1}{2}$ diameter of the orbit in length. In the largest preserved specimen one of these barbels is subdivided into three at its external extremity. In one moderate-sized specimen a number of glands open along its suborbital ring of bones.

Pharyngeal teeth curved, short, 5, 3, $2\frac{1}{2}$, 3, 5.

Fins. Dorsal arises slightly in advance of ventrals; first two undivided rays osseous but minute, third not half so long as fourth, which is moderately bony, smooth, ends in an articulated extremity, and is then as long as the first branched ray. Upper margin of the fin concave. Pectoral extends to ventral, which does not extend, by the width of two scales, to the anal, which last fin commences midway between the extremity of the caudal and base of the pectoral; its first undivided ray minute, its third as long as the first branched one. Anal laid flat reaches the base of the caudal. Caudal almost lunated, its central rays almost equal to the longest of the outer rows.

Scales. Four and a half rows between lateral line and base of dorsal fin, and two and a half between lateral line and base of ventral.

Lateral line in single tubes, curves very slightly downwards, and opposite the end of the ventral proceeds direct to centre of base of caudal fin.

Colours. Silvery above lateral line, and with a dash of yellow below it. Fins of a bluish tinge, especially the caudal. Eyes golden.

This magnificent Carp grows to a very large size: one was brought weighing 38 pounds; and its size may be imagined when the specimen 39 inches long did not weigh 14 pounds. It is said to grow to 50 or 60 pounds weight, and is very common at Kurnool, where it is esteemed as food by the natives. It is one of the Mahseers of India.

I have named it after my esteemed friend and correspondent A. C. Brisbane Neill, Esq., F.Z.S.

BARBUS GUENTHERI, sp. nov.

B. iii. D. $4\frac{1}{9}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 19. L. 1. 42. L. tr. $10\frac{1}{6}$.

Length of specimens from 2 to $5\frac{3}{10}$ inches.

Length of head a little above $\frac{1}{5}$, of pectoral $\frac{1}{6}$, of caudal $\frac{2}{7}$, of base of dorsal $\frac{1}{8}$, of base of anal $\frac{1}{15}$ of the total length. Height of head $\frac{1}{7}$, of body $\frac{1}{4}$, of dorsal fin $\frac{1}{4}$, of ventral $\frac{1}{6}$, of anal $\frac{1}{6}$ of the total length.

Eyes. Upper margin near the profile; diameter $\frac{1}{3}$ of length of head, 1 diameter from end of snout, and 1 diameter apart.

Body rather compressed; a considerable rise in the profile from the occiput to dorsal fin. Snout somewhat obtuse.

Lower jaw slightly shorter than the upper; the posterior extremity of the maxilla extends nearly to beneath the anterior margin of the orbit. The maxillary cirri are equal to the diameter of the orbit in length, extending to slightly beyond its centre. The superior

margin of præorbital bone its longest. Operculum one-third higher than broad.

Teeth. Pharyngeal teeth crooked, pointed, in three rows, 5, 3, 2/2, 3, 5.

Fins. Dorsal commences slightly in advance of the ventral, and midway between snout and base of caudal; its first two undivided rays are very short; the fourth is cartilaginous and articulated, in large specimens it becomes osseous, but is never strong. Anal begins midway between the posterior extremity of operculum and the posterior extremity of the caudal fin, which last is deeply lobed.

Scales with numerous horizontal striæ; there is an exceedingly low row along the base of the dorsal fin, and one hardly higher along the base of the anal.

Lateral line curves downwards along the first six or seven scales, when it becomes straight and passes along the middle of the side of the body.

Colours. Silvery, with a tinge of yellow, but without any spots or markings.

Hab. Kurnool, where it is exceedingly common in both the Hindree and Tamboodra rivers. It grows to upwards of a foot in length, and is esteemed good eating by the natives, but, like the rest of its genus, is bony.

I have named this species after Dr. A. Günther, F.R.S., who was good enough to point out that the name that I had originally given to it was preoccupied.

BARBUS AMBASSIS, sp. nov.

B. iii. D. $\frac{3}{8}$. P. 11. V. 9. A. 2/5. C. 19. L. l. 36.

Length of specimens to $2\frac{3}{10}$ inches.

Length of head $\frac{2}{11}$, of base of dorsal $\frac{1}{9}$, of base of anal $\frac{2}{11}$, of caudal $\frac{1}{4}$ of the total length. Height of the head $\frac{2}{11}$, of body $\frac{2}{7}$, of dorsal $\frac{2}{11}$, of ventral $\frac{2}{11}$, of anal $\frac{1}{7}$ of the total length.

Eyes without any adipose lids; nearly $\frac{2}{5}$ of length of head, 1 diameter apart, $\frac{1}{2}$ a diameter from end of snout.

Opening of mouth oval; upper jaw slightly the longest; no horny covering to the lips, which are thin. Maxilla extending to nearly beneath the anterior margin of the orbit. Suborbital ring of bones covers the cheek. No barbels.

Pharyngeal teeth sharp, curved, 5, 3, 2/2, 3, 5.

Fins. Dorsal arises slightly anterior to the ventral, midway between snout and the base of the caudal; its third undivided ray is very strong, flattened, and strongly serrated posteriorly, having about fifteen sharp teeth; superiorly it ends in a soft point. Anal arises midway between the snout and the posterior extremity of the caudal fin, which last is deeply lobed. The pectoral scarcely reaches the ventral, which latter just extends to the anal.

Scales small, very deciduous. Six rows between the lateral line and the base of the ventral fin. No enlarged row along the base of the anal fin.

Lateral line in a single tube in each scale, but only distinctly apparent in the anterior third of the body; still a rudiment of it is perceptible at irregular intervals as far as the centre of the base of the caudal fin. A small row along the base of the dorsal fin.

Colours. Light greenish superiorly, becoming white along the abdomen. A brilliant broad silvery band extends from the eye along the side to the root of the caudal fin. A small black spot is present at the base of the dorsal fin at its anterior margin, and a large black finger-mark at the root of the tail. The coloration is essentially that of an *Ambassis*.

This elegant little fish does not seem to grow to any large size. At Kurnool, in October, females 2 inches in length were found full of ova.

Hab. Kurnool, in Madras; some specimens have also been received from Arcot, showing that its geographical range is wide.

This fish cannot be looked upon as a typical *Barbus*, but approaches that genus, as defined by Dr. Günther, more nearly than any other.

BARBUS NASHII, sp. nov.

B. iii. D. 3/11. P. 15. A. 3/5. C. 19. L. l. 41. L. tr. $\frac{7\frac{1}{2}}{4\frac{1}{2}}$.

Length of specimens up to $3\frac{2}{10}$ inches.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{5}$, of base of dorsal $\frac{1}{5}$, of base of anal $\frac{1}{16}$, of caudal $\frac{2}{9}$ of the total length. Height of head $\frac{1}{8}$, of body $\frac{1}{5}$, of dorsal fin $\frac{1}{6}$, of anal $\frac{1}{6}$ of the total length.

Eyes without any adipose lid; diameter $\frac{1}{3}$ of length of head, 1 diameter from end of snout, $1\frac{1}{4}$ diameter apart.

Mouth antero-inferior; there is a slight thickening of the mucous membrane covering the jaws, but not sufficient to be termed horny; in fact it would be scarcely apparent were it not that it is of a dark colour; if the species grows much larger, which is doubtful, it may become horny. Lips thin, not fringed, no lateral lobe, no tubercle on symphysis, nor pores on the snout. No barbels.

Pharyngeal teeth crooked, sharp, 5, 4, $\frac{3}{3}$, 4, 5.

Fins. Dorsal arises slightly in advance of the ventral, but does not extend so far as to above the commencement of the anal; the upper margin of the fin slightly concave, its third undivided ray articulated and weak. Caudal deeply forked.

Scales. No enlarged ones along the base of the anal fin.

Lateral line proceeds direct to the centre of the base of the caudal fin.

Colours. Reddish brown along the back, and silvery over the abdomen. A black band passes from the eye to the centre of the base of the caudal fin. Fins whitish. A dark band along the middle third of the dorsal, and a dark edging to the caudal.

This very pretty little fish was collected for me, amongst others, from the Fraserpett river, at the base of the Coorg Hills. Judging from its coloration, it is a small species and only found in hilly regions or along their bases.

I have named it after Dr. Nash, to whom I am indebted for many specimens from the Coorg district.

BARBUS (PUNTIUS) MELANAMPYX, Day.

This species Dr. Günther* considers identical with *Barbus (Puntius) grayi*, Day, and *Barbus (Systomus) arulius*, Jerdon.

Whether my *B. grayi* is merely a variety of *B. melanampyx* I am unable to be quite decided about, not having a specimen of the latter at hand to compare with; but it certainly is not identical with the *B. arulius*, as I shall presently show. Dr. Jerdon observes, "I know your *Puntius melanampyx* well; I noticed it in my catalogue as *Cirrhinus fasciatus*." This fish Dr. Günther has placed as a *Tylognathus* (p. 62) amongst the doubtful species. But the specific name *fasciatus* is occupied by a species of Dr. Bleeker's †.

As regards the differences between the *Barbus grayi* and *B. arulius*, some easily recognized ones are as follows:—

B. grayi. D. 3/7–8. A. 2/5–6. L. l. 20. Four barbels. Lateral line first curves very slightly downwards and then rises opposite to the commencement of the dorsal fin. Caudal lobed in its outer third or, even, half.

B. arulius. D. 3/8–9. A. 2/5. L. l. 23. No barbels. Lateral line curves directly downwards to above the ventral fin. Caudal deeply emarginated in its posterior three-fourths. The rise from the snout to the dorsal is great in the *B. grayi*, but slight in the *B. arulius*.

Having been unexpectedly directed to visit the various "anicuts" or weirs in the rivers of the Madras Presidency, for the purpose of ascertaining whether they are or are not causing destruction to the freshwater fisheries, I must defer the continuation of this paper until after my return.

6. Some remarks on the New Genus *Macrobrachium* of Mr. Spence Bate. By Dr. C. SEMPER.

The second number of the 'Proceedings of the Zoological Society' of 1868 contains an article by Mr. Spence Bate on a new genus of freshwater Crustaceans. Having had the opportunity of examining the original specimens of two of Mr. Bate's so-called new species, I found, to my great astonishment, that certainly two, if not three, of these new species are well known, and have been repeatedly figured and described.

Macrobrachium americanum, Spence Bate, from Lake Amatitlan, is identical with *Palæmon jamaicensis*, Herbst. To my knowledge, Sir Hans Sloane ‡ is the first author who described and figured this crustacean from Jamaica, as early as 1725; and Parra§ described it in 1787 as "*Camaron de agua dulce*." Leach, in his 'Zoological Miscellany,' repeats that it lives in fresh water; but Milne-Edwards

* Catalogue of Fishes, vii. p. 133.

† Günther's Catalogue, vii. p. 122.

‡ A Voyage to the Islands Madera &c., 1725, vol. ii. p. 271, t. 245. fig. 2.

§ Description de diferentes piezas de historia natural &c., 1787, p. 154, t. 55. fig. 2.

omits this fact and simply mentions the Antilles as its home. In the British Museum are numerous specimens of different sizes from Brazil, the West Indies, Surinam, British Guiana, Bahia, and the Isles of Cape Verde. The specimens from Surinam and British Guiana came from fresh water. The only difference between the younger and smaller specimens and the larger ones is that the spines on the legs of the latter are replaced by tubercula; besides they lack the two or three large teeth on the inside of the digits which are found in the extraordinarily large specimens from Lake Amatitlan. Even Milne-Edwards mentions, in his well-known handbook, that these teeth are exclusively found in the oldest individuals—a statement which seems to have escaped Mr. Spence Bate.

Macrobrachium formosense, Spence Bate, is probably only a variety of the well-known *Palæmon ornatus*, Olivier. This species is found distributed from the East Indies, over the Malaccas and Philippine Islands, as far as Australia and the Fiji Islands in the Pacific. I found it myself only in fresh water in the Philippines. The specimens in the British Museum from the Fiji Islands and Australia are also from fresh water.

Macrobrachium longidigitum, Spence Bate, I cannot at present identify with any species known to me; it may therefore pass as a new species.

Macrobrachium africanum, Spence Bate, is one of those unfortunate creatures which nearly every naturalist has declared to be new without even comparing it with other allied species. It is the old *Palæmon gaudichaudii*, Olivier, well figured by d'Orbigny*, 1843. Two specimens of this species with the original labels of Stimpson are in the British Museum; and these, though smaller, so completely correspond with Mr. Spence Bate's original specimens from the Tambo River that their specific identity cannot be doubted. Poëppig † described (1836) the same species from the river "Aconcagua" in Chile, under the name of *Palæmon cementarius*. His description is so careful and exact that no doubt can prevail. Later, Philippi ‡, having obtained the same species from the river "La Ligua" in Chile, founded upon it his genus *Bithynis* with the species *longimana*. The only distinction he could find between this new genus and *Palæmon* was the extremely short rostrum. On the other hand, Mr. Spence Bate, in setting up his genus *Macrobrachium*, attaches great importance to the long arms, but forgets that the species in question has shorter arms than other species of *Palæmon* (as, for instance, *Palæmon carcinus*, Fabr., which also lives in fresh water), and that between these species with very long and others with very short arms all possible transitions are to be found. Both gentlemen, however, entirely overlook another characteristic which seems to be of importance with regard to the subgenus *Leander*. It is the absence of a second spine behind or under the marginal spine of the thorax. If I remember right, Heller mentions somewhere that the species of the genus *Leander*,

* Voyage dans l'Amérique méridion. &c., tome vi. p. 37, pl. 17. fig. 2.

† Archiv f. Naturgesch. 1836, Bd. i. pp. 143-145.

‡ Archiv f. Naturgesch. 1860, Bd. i. pp. 161-164.

which have two spines on the anterior rim of the thorax, are marine, while those of the genus *Palæmon*, with the two spines of the thorax placed one behind the other, are exclusively freshwater forms. This is decidedly wrong, according to my own observations in the Philippines. There are genuine species of *Palæmon* and *Leander* in the sea as well as in rivers and lakes. Philippi's genus *Bithynis*, with only *one* spine on the anterior rim, may therefore be considered a third subgenus of *Palæmon*. The synonymy of this species is therefore as follows:—

Palæmon gaudichaulii, Olivier.

Palæmon cæmentarius, Poeppig.

Bithynis longimana, Philippi.

Macrobrachium africanum, Spence Bate.

I am very glad that I need not change the latter name, which I should be obliged to do if it really were a new species. Mr. Spence Bate seems to be of opinion that the Tambo River is in Africa, whereas it is really on the west coast of South America, near Islay in Peru. The original specimens were collected there by Mr. Whitely.

When Mr. Spence Bate expresses the opinion that all the four species of his supposed new genus have descended from one single primitive form, the reasons which he alleges in favour of this view are not convincing. My own observations in the Philippines make me rather doubtful of the alleged fact that only one particular and no other Palæmonide inhabits each river and lake.

The new genus of Mr. Spence Bate must therefore be suppressed, and also three of his supposed new species. It is not a new fact that these large species of *Palæmon* can be eaten, nor that they live in fresh water. The older naturalists, as Sloane, Parra, Leach, Poeppig, and Philippi, knew it long ago, as may be seen from their writings.

7. On the Genus *Ceyx*.

By R. B. SHARPE.

It seems necessary to say a few words on this genus, as considerable confusion still exists with regard to the correct determination of some of the species; and I am further anxious to set right a point in the synonymy of two of them, by which I myself, in my 'Monograph of the *Alcedinidæ*,' as well as other ornithologists, have been led into error.

The genus *Ceyx* was established in 1801, by Lacépède, and the species included in it have only three toes. The birds seem principally insectivorous, in contrast to the members of the three-toed genus *Alcyone*, the species of which are closely allied to true *Alcedo*, and are almost wholly piscivorous. All the members of the genus *Ceyx* seem occasionally to feed on fish, but are not generally found in the neighbourhood of streams. In their general habits they are allied to the African *Ispidina*.

The genus *Ceyx* may be divided into two natural sections, viz.

(1) those species having the head and rump lilac-rufous, and (2) those of which the heads are black, spotted or banded with blue. The latter section may again be divided into species which have the beak red, and those which have it black. The following synoptic table will, I think, satisfactorily set forth the distinctive characters of each species:—

- A. Capite et uropygio lilacinis: rostro corallino.
- a. Macula ad latera colli cærulea nulla.
- a'. Scapularibus lilacino-rufis 1. *C. rufidorsa*.
- b'. Scapularibus nigris cæruleo lavatis 2. *C. dillwyni*.
- b. Macula ad latera colli cærulea.
- a'. Major: capite lilacino obscuriore maculato: interscapulio et scapularibus rufis: pectore pulchre violaceo lavato 3. *C. melanura*.
- b'. Minor: interscapulio et scapularibus nigris cyaneo maculatis: subtus flava 4. *C. tridactyla*.
- B. Capite nigro, cæruleo aut cyaneo maculato: dorso postico et uropygio cyaneis, ultramarinis, aut argenteo-cæruleis.
- a. Rostro corallino.
- a'. Rostro brevior: genis et regione parotica nigris: dorso postico et uropygio argenteo-cæruleis..... 5. *C. cajeli*.
- b'. Rostro longior: genis et regione parotica cyaneo aut cæruleo maculatis: dorso postico et uropygio cyaneis aut ultramarinis.
- a''. Scapularibus nigris: dorso postico et uropygio late cyaneis 6. *C. wallacii*.
- b''. Scapularibus cæruleo lavatis: dorso postico ultramarino; uropygio cyanescente.
- a'''. Major: rostro robustior: maculis loralibus majoribus: capitis summi maculis et interscapulio cærulescentioribus... 7. *C. lepida*.
- b'''. Minor: subtus intense aurantia: uropygio late argentescente.. 8. *C. uropygialis*.
- b. Rostro nigro: capite cyaneo fasciato.
- a'. Major: pectore et abdomine intense rufis ... 9. *C. philippinensis*.
- b'. Minor: pectore et abdomine flavis: gula alba 10. *C. solitaria*.

There are in the Indian Region two rufous-headed species of *Ceyx*, one of which has the whole back lilac-rufous, while the other has the middle of the back and scapularies black washed with blue; I propose to call them, for the sake of illustration, the rufous-backed and the blue-backed species respectively. These two birds are sufficiently distinct, but nevertheless they were placed together by all the old writers as being sexes or varieties of one species. The first description and figure of these birds we find in an old Dutch work, by Vosmaer, printed at Amsterdam in 1768. The Zoological Society have just acquired for their library a copy of this rare work, and we find therein the following paper:—"Beschryving van twee zeer fraaie, kortstaartige oost-Indische Ys-vogeltjes," accompanied by a full description and a coloured plate. The upper figure in this plate represents the blue-backed, and the lower figure the red-backed species.

The next mention we find made of these birds is by Pallas in 1769, one year after Vosmaer's description. In the 6th fasc. of his 'Spicilegia' we find a description of *Alcedo tridactyla*, which description I here append.

- "*Vertex ferrugineus, violaceo nitens; frons ad latera dilutiôr. Genæ et tota subtus avis e croceo lactei coloris; præter gulam prorsus albam. Temporum macula lazurea, infraque eam longitudinalis, alba. Interscapulium lazereum, alares plumæ tantum apicibus. Uropygium ferrugineo-violaceum.*
- "*Remiges ferrugineo nigricantes, interiorum quædam margine exteriore ferrugineæ. Cauda brevis, rotundata, ferruginea.*
- "*Pedes albidî, ut rostrum, etc. Unguiculi albicantes.*
- "*Varietas, ut puto, fœminæ, supra tota jucunde ferruginea, alaribus quoque plumis; remigumque, præter extimîs, margine. Vertex, uropygium, extremaque aliquot plumarum dorsalium violaceo nitore perfusa. Pectus magis quam in altera ferrugineum, abdomen albidius. Cærulea temporum areola deficiens."*

It will thus be seen that Pallas considers the red-backed bird to be a variety of his *Alcedo tridactyla*.

In 1771 we find that Linnæus first makes mention of *Alcedo tridactyla*; but, as Dr. Pucheran clearly shows, Linnæus's description is merely a reproduction of Vosmaer's. The following is Linnæus's description:—

- "*A. brachyura, supra caudaque rufis, subtus flava, pedibus tridactylis.*
- "*Hab. in India orientali.*
- "*Altera avis supra tota rufa, etiam cauda; ventre postico flavo.*
- "*Altera dorso cæruleo, tota subtus flava, gula alba; genæ flavæ; remiges nigræ."*

In 1783 Boddaert named the blue-backed species *Alcedo rubra* from Buffon's Pl. Enl. 778. fig. 2, upon which also the *Alcedo purpurea* of Gmelin's 'Systema' (1788) was founded. In 1846 Mr. Strickland received both birds from Malacca, and he at once saw that they constituted distinct species. Applying the name *tridactyla* of Pallas to the blue-backed bird, he gave to the red-backed one the appropriate name of *rufidorsa*.

To this decision Dr. Pucheran demurs; and the following is the argument of the learned doctor. He says that the first time Linnæus makes mention of the name *tridactyla* is in the 'Mantissa,' and the only work quoted by him is Vosmaer's 'Monographia.' Dr. Pucheran had not the original edition of Vosmaer's book; but he had the French translation, and he proceeds to show (which is undoubtedly the case) that the description of Linnæus is merely a copy of that of Vosmaer's.

The learned doctor then quotes Pallas's description, as given above, and shows that his "*varietas*" is the same to all intents and purposes as Mr. Strickland's *Ceyx rufidorsa* (P. Z. S. 1846, p. 99); and there can be no doubt, as Mr. Strickland himself observes,

that his is the same bird as the red-backed variety of Vosmaer's Ys-vogel, and of Pallas's and Linnæus's *Alcedo tridactyla*. Dr. Pucheran thus sums up his argument:—"However the case may be, it is impossible to deny that the variety, or rather the race with the back blue, of which Vosmaer, Linnæus, and Pallas have spoken, has been signalized as a distinct species by Gmelin, who gave it the name of *Alcedo purpurea*, afterwards the *Ceyx purpureus* of Cuvier. This synonymy appears to us incontestable; and this conviction results from it, that, the two types, one with the back blue and the other with the back red, having been first confounded by Linnæus, and afterwards by Pallas, under the common denomination of *Alcedo tridactyla*, and the first having been separated by Gmelin (*Alcedo purpurea*, Gm.; *Ceyx purpureus*, Cuv.), the name of *Alcedo tridactyla* ought properly to fall to the second, and to become a synonym of the *Ceyx tridactyla* of Jardine and Selby, which is the same bird as *Ceyx rufidorsa*, Strickland.

It was the conviction that Dr. Pucheran was right that induced me to coincide in his rectification of the synonymy of these two birds in my 'Monograph.' But since the examination of Vosmaer's original work, I have had occasion to be somewhat sceptical as to the value of the worthy doctor's argument.

Vosmaer, as it appears, was not a binominalist, and nowhere does he apply a Latin name to the birds he was describing in the present instance.

Then, again, Dr. Pucheran was most decidedly wrong in saying, in the above-quoted sentence, that the two birds were *first* confounded by Linnæus, and *afterwards* by Pallas; for the name of the latter has a priority of two years.

The plain solution of the difficulty seems to be that the blue-backed bird is the *Alcedo tridactyla* of Pallas, and therefore ought to bear the name. Vosmaer must be left out of the question, as he never gave a scientific name to the bird at all. And the name *rufidorsa* must be applied to the red-backed species, Mr. Strickland's being the first description of that bird. I have endeavoured to give the full and correct synonymy of the two species at the end of this paper.

I cannot reconcile the *Martin-pêcheur de l'île de Luçon* of Sonnerat exactly with any of the rufous-headed species. The descriptions of the old authors are so erroneous in many cases that they are not at all to be depended upon; but if, as Dr. Pucheran suggests, the bird described by him is really distinct from *Ceyx rubra*, it can only be referable to *Ceyx melanura* of the Philippines; and of this species his description can only be considered a loose and inaccurate one.

Ceyx melanura is a very excellent species, easily distinguishable by the obscure lilac spots on the crown. While engaged in the study of the rufous-headed *Ceyces*, my attention was attracted to a plate in Prof. Reichenbach's 'Handbuch' representing what he calls *Ceyx tridactyla*, and I could not recognize these figures as being copies of any figures in any work with which I was acquainted. They are intended to represent two Bornean birds in the Dresden Museum.

Now these figures of Reichenbach cannot be reconciled with any of the three rufous-headed species of *Ceyx*, viz. *Ceyx tridactyla* of Penang and the Indian peninsula, *Ceyx rufidorsa* of Malayana, and *Ceyx melanura* of the Philippines. Reichenbach's bird cannot be *Ceyx rubra*, because this species has the middle of the back black washed with blue, and has a conspicuous blue spot behind the ear. This spot is wanting in the Bornean bird, which also has the back rufous from beak to tail. Nor can his bird be intended for either of the other two species, as both of these have rufous scapularies. I therefore came to the conclusion that the Bornean *Ceyx* must be a distinct species; and I have had some correspondence on the subject with Dr. Salvadori of Turin, who is contemplating the publication of a paper on the genus.

In the 'Natural History of Labuan,' by Messrs. Motley and Dillwyn, I found a curious corroboration of my ideas on the subject; for there we read that a specimen of *Ceyx tridactyla* is "above, from the beak to the tail, rufous red," and has the "scapulars dusky black, tipped with rich blue." This description will not do for the Malaccan, while it answers exactly to Reichenbach's figures of the Bornean birds. I therefore wrote to Mr. Dillwyn to ask him to favour me with a sight of the bird described by him as *Ceyx tridactyla*; and he very kindly sent me the bird to examine. I immediately found all my ideas as to its specific distinctness to be quite correct, and I therefore propose to name this beautiful bird

CEYX DILLWYNNI, sp. n.,

in acknowledgment of that gentleman's kindness in enabling me thus to elucidate this difficult question. The new species has no blue spot at the side of the neck, and therefore cannot be confounded with *Ceyx tridactyla* or *Ceyx melanura*. From *Ceyx rufidorsa* it is at once distinguished by its slightly larger size, and by the scapularies, which are black washed with blue.

Of the other section of the genus *Ceyx* (that is, of those of which the heads are black with bright blue spots) the first described were *C. lepida* and *C. solitaria*, which were figured by Temminck in the 'Planches Coloriées.' The type specimen of *C. lepida*, which is a young bird, is figured by me in the plate of the species in my 'Monograph of the Alcedinidæ,' but the blue on the scapularies is not very well represented. I know, however, that the type specimen has this colour, as Mr. Keulemans made a careful examination of the specimen for me. In Bouru the very distinct species *C. cajeli*, Wall., is found, and in the Sula Islands the equally distinct species *C. wallacii*, Sharpe. The newly described *Ceyx philippinensis* of Gould, though closely allied to *Alcyone cyanipectus*, is a good species, as I have since found another specimen in the British Museum. I cannot satisfactorily make out the *Ceyx uropygialis* of Mr. Gray. I believe it to be distinct; but it is the most obscure species of the whole genus. It differs principally in its smaller size and brighter colouring of the rump. I have seen specimens from Gilolo, Batchian, and Ternate, from which latter island the type specimen

came. There is, however, another bird of which I have seen specimens from Batchian and Gilolo, which I cannot reconcile at all with any of the other species. It is larger than *C. uropygialis* and about the size of *C. lepida*, and many people would be inclined to consider it the young of the latter bird; but the blue spots on the head are very small and obscure, and the blue on the back not nearly so much developed as in *C. lepida*, while it presents the bright rump of *C. uropygialis*. I at present consider it to be a variety of the latter bird; but I think that when we know more of the different species, it may prove to be distinct.

I add a list of the species at present known to me, with a full synonymy, the descriptions being taken from my 'Monograph' when the species have already been noticed there.

1. *CEYX RUFIDORSA*, Strickl. Strickland's Kingfisher.

Alcedo purpurea, var., Shaw, Gen. Zool. viii. p. 97 (1811).

Ceyx tridactyla, Jard. and Selby, Ill. of Orn. i. pl. 55. fig. 2; Sharpe, Monogr. *Alced.* part 2. plate only (1868).

Ceyx rufidorsa, Strickl. P. Z. S. 1846, p. 99; Gray, Gen. of Birds App. p. 5 (1848); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849); Reich. Handb. *Alced.* p. 8, t. ccxcviii. fig. 3070 (1851); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Hartl. Journ. f. Orn. 1854, p. 413; Horsf. & Moore, Cat. Birds Mus. E. I. Co. p. 132 (1854); Moore, P. Z. S. 1854, p. 270; Cab. & Heine, Mus. Hein. Th. ii. p. 152 (1860); Wallace, P. Z. S. 1863, p. 484; Sharpe, P. Z. S. 1868, p. 271.

Dacelo rufidorsa, Schl. Mus. Pays-Bas, *Alced.* p. 48 (1863); id. Vog. Ned. Ind. *Alced.* pp. 40, 67, pl. 16 (1864).

Chuchack-wrang of the Javans (*Horsfield*).

Binti-abang of the Malays of Sumatra (*Raffles*).

Bintei of the Bornese (*Motley*).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli carulea nulla: scapularibus lilacino-rufis: subtus flava.

Hab. in regione Indo-Malayana.

Above lilac-rufous, tinged on the sides and back of the head and on the back with shining violet; wing-feathers blackish, the inner web rufous from the base, more conspicuous on the secondaries, which are almost entirely rufous; throat and a patch of feathers on each side of the neck white, tinged with light orange; a loreal spot (very faintly developed), cheeks, and under surface of the body bright orange; bill and feet coral-red. Total length 4·7 inches, of bill from front 1·2, from gape 1·09, wing 2·2, tail 0·8, tarsus 0·25, middle toe 0·4, hind toe 0·2.

Hab. Malacca (*Cantor*), Sumatra (*Mus. Lugd.*), Bangka (*Mus. Lugd.*), Java (*Mus. Lugd.*), Bavian Island (*Hartlaub*), Lombok (*Wallace*), Sumbawa (*Mus. Lugd.*), Flores (*Wallace*), Borneo (*Motley*).

The above description and measurements are taken from a nicely preserved skin obtained in Flores by Mr. Wallace, and now in my own collection. I have another specimen in my collection, which

is larger and brighter than any I have yet seen. This was purchased of a dealer, and is said to be from Singapore; but Lord Walden thinks it may have come from Camboja. The following are the measurements of this specimen. Total length 5·1 inches, of bill from front 1·4, from gape 1·7, wing 2·4, tail 1, tarsus 0·25, middle toe 0·45, hind toe 0·2.

2. CEYX DILLWYNNI, Sharpe, sp. n. Labuan Kingfisher.

Ceyx tridactyla, Reich. Handb. *Alced.* p. 8, t. ccciii. b. fig. 3389 (1851); Motley & Dillwyn, Nat. Hist. of Lab. p. 13 (1855).

Ceyx rufidorsa, Sclater, P. Z. S. 1863, p. 213.

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea nulla: scapularibus nigris cæruleo lavatis.

Hab. in insulis "Labuan" et "Borneo" dictis.

Head, neck, and the whole of the back lilac-rufous, with beautiful shades of violet; a little spot at the base of the beak blue; a longitudinal patch of feathers on the sides of the neck white; scapularies black, washed with bright blue; tail rufous, blackish towards the tips of the feathers; wing-coverts rufous; wing-feathers blackish, the inner web rufous from the base, more conspicuous on the secondaries, the outer web of the exterior primary rufous for the greater part of its length; chin and abdomen white; shoulders, upper part of the breast, flanks, and under wing- and tail-coverts rufous; bill and feet coral-red. Total length 5·8 inches, of bill from gape 1·5, wing 2·45, tail 1·2, tarsus 0·25, middle toe 0·4, hind toe 0·2.

Hab. Labuan (*Dillwyn*); Banjermassing (*Motley*).

The above description and measurements are taken from the type specimen, which has been most kindly presented to me by Mr. Dillwyn, and now forms part of my collection. I have ascertained that the specimen recorded by Dr. Sclater (*l. c.*) is referable to this species, by a personal examination of the bird, which is now in Lord Walden's collection.

3. CEYX TRIDACTYLA (Pall.). Penang Kingfisher.

Alcedo tridactyla, Pallas, Spic. Zool. vii. p. 10, t. 2. fig. 1 (1769); Linn. Mant. Plant. p. 524 (1771); Scop. Del. Faun. et Flor. Insubr. ii. p. 90 (1786); Gm. Syst. Nat. i. p. 459 (1788).

Alcedo rubra, Bodd. Tabl. Pl. Enl. p. 49 (1848).

Ceyx rubra, Gray, Cat. Fiss. Brit. Mus. p. 49 (1848).

Dacelo rubra, Schl. Mus. Pays-Bas, *Alced.* p. 49 (1863); id. Vog. Ned. Ind. *Alced.* pp. 40, 68, pl. 16 (1864).

Alcedo purpurea, Gm. Syst. Nat. i. p. 449 (1788).

Ceyx purpurea, Less. Traité d'Orn. p. 38 (1831); Reich. Handb. *Alced.* p. 9, t. cccxcviii. fig. 3071 (1851); Bonap. Cons. Vol. Anis. p. 9 (1854).

Ceyx purpureus, Cuv. Règne Anim. i. p. 120 (1829); Hartl. Journ. f. Orn. 1855, p. 423.

Ceyx tridactyla, Sykes, P. Z. S. 1832, p. 84; Strickl. P. Z. S. 1846, p. 99; Gray and Mitch. Gen. of Birds, i. p. 459 (c. 1844);

Jerdon, Ill. Ind. Orn. pl. 25 (1847); Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); Bonap. Consp. Gen. Av. i. pp. 157, 158 (1850); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Hartl. Journ. f. Orn. 1854, p. 413; Moore, P. Z. S. 1854, p. 269; Jerdon, Birds of Ind. i. p. 229 (1862); Gray, Cat. Mamm. and Birds of Nep. p. 24 (1863); Sharpe, P. Z. S. 1868, p. 271.

Alcedo erithaca, Gm. Syst. Nat. i. p. 449 (1788).

Ceyx erythaca, Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849); Mason, Burmah, p. 674.

Ceyx luzoniensis, Stephens, Gen. Zool. xiii. p. 106 (1825).

Ceyx microsoma, Burton, P. Z. S. 1837, p. 89.

Martin-pêcheur de l'île de Luçon, Sonn. Voy. Nouv. Guin. p. 67, pl. 32 (1776).

Martin-pêcheur de Pondicherry, Buff. Pl. Enl. 778. fig. 2.

Dein-nygeen of the Aracanese (*Blyth*).

Raja-whadan of the Malays (*Eyton*).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea: minor: interscapulio et scapularibus nigris, cyaneo lavatis: subtus flava.

Hab. in regione Indica.

Head and nape rufous, tinged with lilac; upper part of the back, scapularies, and wing-coverts black, washed with bright blue; lower part of the back, rump, and upper tail-coverts rufous, washed with bright lilac; wing-feathers blackish, the inner web rufous from the base; tail rufous; a spot in front of the eye, cheeks, sides of the neck, and under surface of the body pale orange; chin and a patch of feathers on the side of the neck white; a spot at the base of the bill and a patch of feathers behind the ear blue; bill and feet coral-red; eyes brown. Total length 5·3 inches, of bill from front 1·2, from gape 1·6, wing 2·3, tail 1, tarsus 0·2, middle toe 0·4, hind toe 0·2.

Hab. India and Ceylon (*Jerdon*), Nepal (*Hodgson*), Penang (*Cantor*), Singapore (*Mus. Phil.*), Sumatra (*Mus. Lugd.*), Java (*Mus. Brit.*), Philippines (*Cuming*).

4. CEYX MELANURA, Kaup. Lilac-spotted Kingfisher.

Ceyx melanura, Kaup, Fam. der Eisev. p. 15 (1848); Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); id. Gen. of Birds, App. p. 5 (1848); Bonap. Consp. Gen. Av. i. p. 158 (1850); Reich. Handb. *Alced.* p. 9 (1851); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Hartl. Journ. f. Orn. 1854, p. 415; Bonap. Consp. Vol. Anis. p. 9 (1854); Cab. & Heine, Mus. Hein. Th. ii. p. 151 (1860); Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Dacelo melanura, Schl. Mus. Pays-Bas, *Alced.* p. 49 (1863).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea: major: capite lilacino obscure maculato: interscapulio et scapularibus rufis: pectore pulchre violaceo lavato.

Hab. in insulis Philippinis.

Above lilac-rufous, the head and cheeks obscurely spotted with faint lilac; scapularies rufous, a line of black feathers at the base; a patch of feathers on the sides of the neck blue; wing-coverts black, the tip of each feather spotted with bright blue; wing-feathers blackish, the inner web rufous from the base; tail above rufous, the exterior feathers blackish; a loreal spot very faint orange; throat and a longitudinal patch of feathers under the before-mentioned blue spot on the sides of the neck white; breast shining lilac tinged with violet; centre of the abdomen whitish; under wing- and tail-coverts light rufous; bill and feet rich coral-red. Total length 5 inches, of bill from front 1·2, from gape 1·6, wing 2·1, tail 0·7, tarsus 0·5, middle toe 0·45, hind toe 0·2.

Hab. Philippine Islands (*Mus. R. B. Sharpe*): Luzon; Manilla (*Mus. J. Gould*).

5. CEYX CAJELI, Wallace. Bouru Kingfisher.

Ceyx cajeli, Wall. P. Z. S. 1863, p. 25, pl. v.; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. i. (1868).

Dacelo cajeli, Schl. Vog. Ned. Ind. *Alced.* pp. 39, 67, pl. 16 (1864); id. Ned. Tijdschr. 1866, p. 339.

C. capite nigro, cyaneo maculato: dorso postico et uropygio argenteo-ceruleis: rostro corallino, brevior: genis et regione parotica nigris.

Hab. in insula dicta "Bouru" maris Celebensis.

Crown of the head and wing-coverts black, with very minute spots of clear blue, each feather having a central streak of brighter colour; back silvery blue; scapulars and tail black; wing-feathers black, the inner web light reddish near the base; a loreal spot light orange; a patch of feathers on each side of the neck white tinged with orange; throat white; under part light orange, deeper on the flanks; a considerable patch of feathers on the sides of the upper part of the breast black; bill and feet pale coral-red; eyes dark. Total length 5·5 inches, of bill from front 1·2, from gape 1·6, wing 2·5, tail 1, tarsus 0·3, middle toe 0·9, hind toe 0·2.

Hab. Bouru (*Wallace*).

6. CEYX WALLACII, Sharpe. Wallace's Kingfisher.

Ceyx wallacii, Sharpe, P. Z. S. 1868, p. 270; id. Monogr. *Alced.* pt. 1 (1868).

Ceyx lepida, Wall. P. Z. S. 1862, p. 338.

C. capite nigro cyaneo maculato: rostro corallino, longior: genis cum regione parotica cyaneo maculatis: scapularibus nigris: dorso postico et uropygio læte cyaneis.

Hab. in insulis dictis "Sula" maris Celebensis.

Above black; head and neck spotted with cobalt, more on the latter, each feather having a central stripe of brighter blue; cheeks and wing-coverts streaked with bright cobalt; back very rich shining cobalt, the upper tail-coverts slightly tinged with ultramarine; scapularies black; wing- and tail-feathers blackish, the inner web of

the former light rufous from the base; throat whitish; a spot on each side of the base of the bill and the whole of the under surface bright orange; the characteristic spot on the sides of the neck deep rufous brown; a line at the base of the loreal spot, also the space between this spot and the eye, and a large patch of feathers on the side of the upper part of the breast deep black; bill and feet coral-red; iris dark. Total length 5.5 inches, of bill from front 1.4, from gape 1.7, wing 2.5, tail 1, tarsus 0.2, middle toe 0.5, hind toe 0.2.

Hab. Sula Islands (*Wallace*).

7. CEYX LEPIDA, Temm. Beautiful Kingfisher.

Ceyx lepida, Temm. Pl. Col. 595; Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); Bonap. Consp. Gen. Av. i. p. 158 (1850); Reichenb. Handb. *Alced.* p. 10, t. cccxcviii. fig. 3066 (1851); Cass. Cat. Halc. Phil. Mus. p. 14 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Gray, P. Z. S. 1860, p. 348; id. P. Z. S. 1861, p. 433; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Alcyone lepida, Gray and Mitch. Gen. of Birds, i. p. 82 (c. 1844).

Dacelo lepida, Schl. Mus. Pays-Bas, *Alced.* p. 48 (1863); id. Vog. Ned. Ind. *Alced.* pp. 39, 66, pl. 16 (1864).

C. capite nigro, cæruleo maculato: rostro corallino, longiore, robustiore: genis et regione parotica cæruleo maculatis: dorso ultramarino, uropygio cyanescente: major: maculis lorealibus majoribus: capitis summi maculis et interscapulio cærulescentioribus.

Hab. in insulis dictis "Ceram," "Amboina," et in Nova Guinea australi et australi-occidentali.

Head, nape, cheeks, and wing-coverts black, plentifully spotted with rich ultramarine, each feather having a central stripe of brighter blue; scapularies black, washed with rich ultramarine; back very bright ultramarine, becoming silvery blue towards the rump; wing-feathers blackish, the inner web rufous from the base; tail blackish, tinged with ultramarine; throat and a longitudinal patch of feathers on the side of the neck white, the latter tinged with orange; a large spot in front of the eye, and the entire under surface orange, paler on the abdomen; bill and feet rich coral-red. Total length 5.5 inches, of bill from front 1.5, from gape 1.7, wing 2.5, tail 1, tarsus 0.3, middle toe 0.5, hind toe 0.2.

Hab. Amboina (*Wallace*), Ceram (*Wallace*); south and southwest coast of New Guinea (*Wallace*, *Von Rosenberg*).

8. CEYX UROPYGIALIS, Gray. Silvery-backed Kingfisher.

Ceyx uropygialis, Gray, P. Z. S. 1860, p. 348; Sharpe, P. Z. S. 1868, p. 271.

C. capite nigro, cæruleo maculato: dorso postico ultramarino: uropygio lacte argenteo: scapularibus cæruleo lavatis: minor: subtus intense aurantia.

Hab. in insulis dictis "Batchian," "Gilolo," "Ternate," maris Celebensis.

Crown of the head black, minutely spotted with ultramarine, each feather having a very faint stripe of cobalt down the centre; scapularies black, faintly washed with ultramarine; back ultramarine on the upper part and on the tail-coverts; rump silvery blue, with a tinge of greenish in some lights; wing-coverts black, tipped with ultramarine; wing-feathers blackish, the inner web rufous from the base; tail black; throat and a longitudinal patch of feathers on the sides of the neck white; a spot in front of the eye pale orange; under surface with the under wing- and tail-coverts very rich orange; bill and feet coral-red. Total length 5·5 inches, of bill from front 1·3, from gape 1·7, wing 2·4, tail 0·9, tarsus 0·25, middle toe 0·45, hind toe 0·2.

Hab. Batchian, Gilolo, Ternate (*Wallace*).

9. CEYX PHILIPPINENSIS, Gould. Philippine Kingfisher.

Ceyx philippinensis, Gould, P. Z. S. 1868, p. 404.

C. rostro nigro, longiore: capite cyaneo fasciato: gula rufescente: pectore et abdomine intense rufis: pectoris lateribus intense lazulino lavatis.

Hab. in insulis Philippinis.

Head and nape bright indigo, thickly banded with irregular markings of bright cobalt; back very bright shining cobalt, inclining to ultramarine on the rump; scapularies black, washed with bright indigo, and spotted with cobalt; wing-feathers blackish, the secondaries narrowly edged with indigo; throat whitish, tinged with rufous; a patch of feathers on the side of the neck pure white, tinged with rufous on the outer edge; a spot in front of the eye and the entire under surface, as well as the under wing-coverts, deep rufous, the lower part of the abdomen and under tail-coverts slightly tinged with indigo; shoulders, and a spot on each side of the upper part of the breast, shining laguli-blue; upper mandible brownish black, lower mandible pale orange; feet orange. Total length 5·5 inches, of bill from front 1·3, from gape 1·7, wing 2·3, tail 1·1, tarsus 0·3, middle toe 0·5, hind toe 0·2.

Hab. Luzon; Manilla (*Mus. J. Gould*).

10. CEYX SOLITARIA, Temm. Solitary Kingfisher.

Ceyx solitaria, Temm. Pl. Col. 595; Gray, P. Z. S. 1858, p. 172; id. P. Z. S. 1859, p. 155; id. P. Z. S. 1861, p. 433; Rosenb. Journ. f. Orn. 1864, p. 118; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Acyone solitaria, Gray and Mitch. Gen. of Birds, p. 82 (c. 1844); Bonap. Consp. Gen. Av. i. p. 158 (1859); Reich. Handb. *Alced.* p. 7, t. cccxviii. fig. 3067 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).

Alcedo solitaria, Schl. Mus. Pays-Bas, *Alced.* p. 17 (1863); id. Vog. Ned. Ind. *Alced.* pp. 12, 48, pl. 3 (1864).

Therosa solitaria, Müller, MS.

Ceyx meninting, Lesson, Voy. Coq. i. p. 691 (1826); id. *Traité d'Orn.* p. 241 (1831).

C. rostro nigro: capite cyaneo fasciato: omnino minor: pectore et abdomine flavidis: gula alba.

Hab. in Nova Guinea et in insulis adjacentibus.

Head and nape black, banded with bright ultramarine; back and scapularies rich ultramarine; cheeks and wing-coverts black, spotted with bright ultramarine; wing-feathers blackish, the inner web fuscous from the base, the secondaries narrowly edged with blue; tail black, edged with blue; throat white; a spot in front of the eye and a longitudinal patch of feathers on the sides of the neck yellowish white; entire under surface light orange; bill entirely black; feet orange. Total length 5 inches, of bill from front 1.3, from gape 1.6, wing 2.1, tail 0.8, tarsus 0.2, middle toe 0.4, hind toe 0.2.

Hab. New Guinea (*Wallace*), Aru Islands (*Wallace*), Ceram (*Mus. Lugd.*), Mysol (*Wallace*).

The only evidence of the appearance of this species in Ceram is an example in the Leyden Museum, said to have come from that island. Mr. Wallace, whose personal acquaintance with the ornithology of the Moluccas renders him the best authority on the subject, is inclined to doubt the occurrence of the bird in that locality.

I append a few notes on the geographical distribution of the genus *Ceyx*. It will be seen by the table at the end of the present paper that representatives of the genus are found in both the Indian and Australian regions. The four rufous-backed species, however, are almost entirely confined to the former, while the blue-backed species are, on the other hand, with one exception, exclusively inhabitants of the Australian region. In the Philippine Islands one species of each section is met with. *Ceyx tridactyla* enjoys the most extended geographical range; for it is found all over India, and extends down the Malayan peninsula as far as the island of Java. At Malacca it meets with *Ceyx rufidorsa*, which is distributed over the Indo-Malayan Islands and extends a little way into the Austro-Malayan subregion, being found in Lomboek, Sumbawa, and Flores. This species is also found in Borneo, and in Labuan the new species *Ceyx dillwyni* is met with. As far as we know, the latter bird is exclusively confined to this island. In the Philippines we find *Ceyx melanura*. This bird is certainly the link connecting the two sections together, as the lilac spots on the head exhibit a tendency towards the blue-backed species of the genus. With the exception of *C. philippinensis*, all the other blue-backed species are confined to the Australian region. *Ceyx wallacii* is apparently confined to the Sula Islands, and *Ceyx cajeli* to Bouru. *C. uropygialis* may be said to be confined to Batchian, Gilolo, and Ternate, though I hear that in the Leyden Museum there are specimens of a *Ceyx* from Morotai, which may ultimately prove to be of this species. *Ceyx lepida* seems to be most plentiful in Ceram and Amboyna, but is also found in New Guinea, though apparently



confined to the south and south-west coast. Here it meets with the range of *C. solitaria*, which is a true Papuan species. I have drawn up a table which will exhibit at a glance the distribution of the various species. In this table I have followed the usual arrangement of Mr. Wallace of the various groups of islands:—

Tabular View of the Geographical Distribution of the Genus Ceyx.

	Indian Region.							Australian Region.														
	Asia.		Indo-Malay Islands.					Timor Group.	Moluccan Group.				Papuan Islands.									
	Indian Asia.	Malacca.	Sumatra.	Bangka.	Java.	Bawian.	Borneo.		Philippines.	Sula Islands.	Lombok.	Sumbawa.	Flores.	Batchian.	Gilolo.	Ternate.	Bouru.	Ceram.	Amboyna.	Aru Islands.	Mysol.	New Guinea.
1. <i>C. rufidorsa</i>	*	*	*	*	*	*	*	..	*	*	*										
2. <i>C. dillwyni</i>	*	*	*										
3. <i>C. tridactyla</i>	*	*	*	..	*
4. <i>C. melanura</i>	*
5. <i>C. cajeli</i>	*
6. <i>C. wallacii</i>	*
7. <i>C. lepida</i>	*	*
8. <i>C. uropygialis</i>	*	*	*
9. <i>C. philippinensis</i>	*
10. <i>C. solitaria</i>	*	..	*	*	*	*

8. A Monographic Revision of the Lepidoptera hitherto included in the Genus *Adolias*, with Descriptions of new Genera and Species. By ARTHUR GARDINER BUTLER, F.L.S., F.Z.S., &c.

(Plate XLV.)

The genus *Adolias* was monographed by Mr. Frederic Moore in the year 1859, and again by Dr. Vollenhoven in 1862; but so much has been learnt respecting the sexes and affinities of the species since that time, the species themselves have increased to such an extent, and the difficulty of classifying them has been so universally felt, that a complete revision of the group has become a necessity.

In the present paper I have been obliged to make several new genera, on account of striking differences of structure observed; the species are also arranged in natural groups to facilitate their determination.

The genus as it now stands contains sixty species, sixteen species having been separated from it to constitute new genera, and eight others being removed to the genus *Symphædra*, Hübner.

Genus ADOLIAS (Boisduval), Westwood.

Typical species *A. aconthea*, Cramer.

Sexes differing in form and pattern; the males resembling *Apaturas* or *Paphias*, the palpi always blunt and cuneiform; the middle discocellular of front wing acutely recurved; the first branch of the subcostal in hind wing emitted close to the base, the second some distance beyond.

LUBENTINA group.

1. ADOLIAS ADONIA.

♀. *Papilio adonia*, Cramer, Pap. Exot. iii. p. 109, pl. 255. figs. C, D (1782).

♂. *Adolias lubentina*, Horsfield, Cat. Lep. Mus. E. I. C. t. 5. fig. 5 (1828-29).

North-east of Java (*Cramer*).

Java, ♂ ♀, B.M.

2. ADOLIAS LUBENTINA.

♀. *Papilio lubentina*, Cramer, Pap. Exot. ii. p. 92, pl. 155. figs. C, D (1779).

♂. *P. lubentina*, Donovan, Ins. China, tab. 36. fig. E (1798).

China (*Cramer*).

North and South India, ♂ ♀, B.M.

3. ADOLIAS AMANDA.

♂ ♀. *Adolias amanda*, Hewitson, Exot. Butterf. ii. p. 70, pl. 35. figs. 3, 4 (1861).

Celebes (*Hewitson*).

Celebes, ♂ ♀, B.M.

4. ADOLIAS EVELINA.

♂. *Papilio evelina*, Stoll, Pap. Exot. pl. 28. figs. 2, 2 b (1791).

♂, Bengal (*Stoll*).

♂, Tranquebar, Coll. Banks.

This insect, as represented by Stoll, is of a brilliant bronzy-green colour.

Race *A. derma*, Kollar, H \ddot{u} gel's Kaschmir, iv. pt. 2. p. 436 (1844).

♂ ♀. *A. eva*, Felder, Reise der Novara, iii. p. 432. n. 692 (1867).

India, Celebes, ♂ ♀, B.M.

5. ADOLIAS SOMA.

♀. *Adolias soma*, Felder, Reise der Novara, p. 432. n. 692 (1867).

North India (*Felder*).

Java, ♂, B.M.

May be only a race of *evelina*, which also occurs as *derma* in both the above localities; it scarcely differs except in the differently formed discoidal spots without scarlet centres.

6. ADOLIAS SIKANDI.

♀. *Adolias sikandi*, Moore, Trans. Ent. Soc. London, p. 75, pl. 7. fig. 4 (1859).

Java (*Moore*).

(Horsfield collection) B.M.

This species is allied to Felder's *A. soma*.

7. ADOLIAS TEUTA.

♂. *Adolias teuta*, Hewitson in Gen. Diurn. Lepid. p. 291. n. 5, pl. 44. fig. 2 (1850).
Sillhet (*Westwood & Hewitson*). North India, ♂ ♀, B.M.

8. ADOLIAS DUNYA.

♂. *Adolias dunya*, Hewitson in Gen. Diurn. Lepid. p. 291. n. 6, pl. 44. fig. 2 (1850).
Borneo (*Wallace*). Borneo, ♂, B.M.
Seems to come into the *Lubentina* group.

SCHRENKII group.

9. ADOLIAS SCHRENKII.

♀. *Adolias schrenkii*, Ménétriés in Schrenck's Amurland, p. 31. n. 62, tab. 3. fig. 2 (1859).

Mountains of Buriah (*Ménétriés*).

This curious species seems most nearly allied to *franciæ*, but is very distinct from all the known *Adoliades*; on the under surface it resembles *Apatura ambica*, Kollar, and *Athyma chevana*, Moore: the former is probably the species imitated*.

FRANCIÆ group.

10. ADOLIAS FRANCIÆ.

♂. *Adolias franciæ*, G. R. Gray, List. Lep. Nepal, p. 12, t. 14 (1833).

♀. *Adolias raja*, Felder, Wien. ent. Monatschr. iii. p. 397. sp. 40, Taf. 9. fig. 2 (1859).

Darjeeling, ♂, B.M.

Felder's specimen is from Assam; the figure is not very characteristic, being very rough and hard.

11. ADOLIAS SAHADEVA.

♀ as ♂. *Adolias sahadeva*, Moore, Trans. Ent. Soc. London, p. 80. n. 39, pl. 8. fig. 3 (1859).

♂. *Differt forma omnino: alæ minores, anticæ apice, posticæ angulò ani acutis, fasciis omnibus anticarum pallidis viridi occultis, posticarum apud costam concurrentibus distinctissimis, in disco autem reductis et partim nigro oblitteratis: maculis marginalibus obscurioribus.*
Nepal, ♂ ♀, B.M.

12. ADOLIAS KARDAMA.

♂ ♀. *Adolias kardama*, Moore, Trans. Ent. Soc. London, p. 80, n. 40, pl. 9. fig. 3 (1859).

China (*Moore*).

Coll. J. O. Westwood.

Allied to *sahadeva*.

* The powerful flight of all the members of the *Emperor* group doubtless gives them a great advantage in aiding their escape from all kinds of enemies.

13. ADOLIAS DURGA.

♂ ♀. *Adolias durga*, Moore, Trans. Ent. Soc. London, p. 80, ♀, pl. 9. fig. 2 (1859).

Darjeeling (*Moore*). North India, ♂ ♀, B.M.

14. ADOLIAS IVA.

♂. *Adolias iva*, Moore, Trans. Ent. Soc. London, p. 78, pl. 8. fig. 2 (1859).

Darjeeling (*Moore*). Darjeeling, ♂, B.M.

15. ADOLIAS CONFUCIUS.

♀. *Adolias confucius*, Westwood in Gen. Diurn. Lepid. p. 291. n. 16 (1850).

China (*Westwood*).

Closely allied to *A. epiona*, but larger; the lower spot on hind wing lunulate and reversely curved.

16. ADOLIAS EPIONA.

Aconthea epiona, G. R. Gray, Lep. Nepal, p. 13 (1833).

Adolias doubledayi (Boisd.), Gray, Lep. Nepal. p. 13, t. 13 (1833).

North India (*Gray, Moore, &c.*). North India, ♂ ♀, B.M.

17. ADOLIAS NARA.

♀. *Adolias nara*, Moore, Trans. Ent. Soc. London, p. 78, pl. viii. fig. 1 (1859).

Habitat unknown (*Moore*). Type specimen, ♀, B.M.

18. ADOLIAS SANCARA.

♂. *Adolias sancara*, Moore, Trans. Ent. Soc. London, p. 78, pl. 9. fig. 1 (1859).

♂, Darjeeling, North India (*Moore*).

North India and China, ♂ ♀, B.M.

The sexes of this species scarcely differ.

19. ADOLIAS VASANTA.

♀. *Adolias vasanta*, Moore, Trans. Ent. Soc. London, p. 77, pl. 7. fig. 2 (1859).

♀, Ceylon (*Moore*).

Ceylon, ♀, B.M.

Evidently nearly allied to *garuda*, but with an oblique white bar across the front wings.

20. ADOLIAS AGNIS.

♀. *Adolias agnis*, Vollenhoven, Tijdschr. voor Ent. p. 202. n. 27, pl. 12. fig. 2 (1862).

♀, Java (*Vollenhoven*).

This species is intermediate between *garuda* and *vasanta* of Moore.

ACONTHEA group.

21. ADOLIAS GARUDA.

♂ ♀. *Adolias garuda*, Moore, Trans. Ent. Soc. London, p. 64, pl. 3. fig. 2 (1859).

North and South India (*Moore*). North India, ♂ ♀, B.M.

Subsp. *Alis omnino pallidiores fulvescentes, maculis discalibus saepe obsoletis* *. North and South India, ♂ ♀, B.M.

22. ADOLIAS LUSIADA.

♂ ♀. *Adolias lusiada*, Felder, Wieu. ent. Monatschr. vii. sp. 89 (1863).

Luzon (*Semper*).

Coll. Felder.

Very nearly allied to *garuda*, Moore.

23. ADOLIAS ANYTE.

♂. *Adolias anyte*, Hewitson, Exot. Butterf. iii. p. 59, pl. 30. fig. 5 (1862).

♂. East India.

Coll. Hewitson.

Seems to be most nearly allied to *garuda*.

24. ADOLIAS MERTA.

♀. *Adolias merta*, Moore, Trans. Ent. Soc. London, p. 72, pl. 6. fig. 4 (1859).

China (*Moore*).

♀, Hopeian Coll., Oxford.

Seems to belong to the *Garuda* type.

25. ADOLIAS KANDA.

♂. *Adolias kanda*, Moore, Trans. Ent. Soc. London, p. 69, pl. 4. fig. 2 (1859).

Borneo (*Wallace*).

♂, Coll. Hewitson.

Appears to be nearly allied to *parta*; but in the figure the discal bands are placed nearer together.

26. ADOLIAS PARTA.

♂ ♀. *Adolias parta*, Moore, Trans. Ent. Soc. Lond. (N.S.), vol. v. p. 63, pl. 3. fig. 1 (1859).

♂. *A. apicalis*, Vollenhoven, Tijdschr. voor Ent. p. 186. n. 5, pl. 10. fig. 1 (1862).

Borneo (*Moore & Vollenhoven*); ♂, India; ♀, Borneo. B.M.

The anal angle of the hind wings varies slightly in different individuals of the male.

27. ADOLIAS ACONTHEA.

♂ ♀. *Pap. aconthea*, Cramer, Pap. Exot. ii. p. 60, pl. 134. figs. D-G (1779).

Batavia (*Cramer*).

Java, ♂ ♀, B.M.

* The figure of the female given in Moore's figure is applicable to this form of the species, although the discal spots are here distinct.

Fabricius, in his 'Species Insectorum' (p. 104. n. 458), compares his *P. melissa* to Cramer's figures of *aconthea*; there can, however, be little doubt that *melissa* is a Satyrine of the genus *Æneis*. The species is said to come from Newfoundland, and the description is nearly the same with that of Fabricius's *fortunatus*. The type is said to be in the Banksian collection; but, unless it is identical with the *polixenes* of the same author, it must be lost: there is, however, a specimen of *Adolias kesava*, ♂ (labelled ?*melitta*, Fabr.); the latter, of course, has no connexion with the Fabrician species.

28. ADOLIAS SOMADEVA.

♀. *Adolias somadeva*, Felder, Reise der Novara, p. 432. n. 691 (1867).

North India (*Felder*).

Larger than the Javan *A. oconthea* (Cramer); the inner margin of all the wings longer, the outer margin of the front wings less curved.

29. ADOLIAS ALPHEDA.

♂ ♀. *Adolias alpheda* (Godart), Moore, Trans. Ent. Soc. London, p. 66, pl. 3. fig. 4 (1859).

Java (*Moore*).

Java and North India, ♂ ♀, B.M.

30. ADOLIAS JAMA.

♂ ♀. *Adolias jama*, Felder, Reise der Novara, p. 431. n. 690 (1867).

North India, Assam, Malacca interior (*Castelnau*); Banca (*Felder*).

A local form of the Javan *A. alpheda*.

31. ADOLIAS OCTOGESIMA.

(♂) ♀. *Adolias octogesima*, Vollenhoven, Tijdschr. voor Ent. p. 193. n. 14 (pl. 10. fig. 5), pl. 11. fig. 1. (1862).

♂ ♀. Java and Borneo (*Vollenhoven*).

The (?) male of this species does not appear to differ from *alpheda* ♂, Java; and I question its being distinct from that insect; the female, however, seems rather to belong to the *Apiades* ♀ group.

32. ADOLIAS HESPERUS.

♀. *Adolias hesperus*, Fabricius, Ent. Syst. iii. pt. 1. p. 47. n. 145 (1793).

♂ ♀. *A. phemius* (Hewitson), Moore, Trans. Ent. Soc. London, p. 65, pl. 3. fig. 3 (1859).

Darjeeling (*Moore*); India and China.

♂ ♀, B.M.

33. ADOLIAS ANOSIA.

♂ ♀. *Adolias anosia*, Moore, Trans. Ent. Soc. London, p. 65, pl. 5. fig. 1 (1859).

North India (*Moore*).

North India, ♂ ♀, B.M.

Allied to *garuda*, but very different.

34. ADOLIAS KESAVA.

♂ ♀. *Adolias kesava*, Moore, Trans. Ent. Soc. London, p. 67, pl. 3, fig. 5 (1859).

Silhet, North India (*Moore*).

North India, ♂ ♀, B.M.

Subsp. ♂. *Areis discalibus fusco purpurascens (nec virescens) lunula punctoque post cellæ anticarum finem.*

East Indies, ♂, B.M.

35. ADOLIAS SURJAS.

♀. *Adolias surjas*, Vollenhoven, Tijdschr. voor Ent. p. 200, n. 24, pl. 12, fig. 1 (1862).

♀. Java (*Vollenhoven*).

Seems to come near *kesava*, Moore.

36. ADOLIAS MAHADEVA.

♂. *Adolias mahadeva*, Moore, Trans. Ent. Soc. London, p. 68, pl. 4, fig. 1 (1859).

Hab. Unknown (*Moore*).

♂, Coll. W. W. Saunders.

Seems to come near *salia* and *kesava*.

37. ADOLIAS RAMADA.

♂. *Adolias ramada*, Moore, Trans. Ent. Soc. London, p. 69, pl. 4, fig. 5 (1859).

"Malacca" (*Moore*).

Malacca, ♂, Coll. Roberts.

The nebulous gloss on the disk of the wings in this species varies from bluish green to violet grey: the nearest ally of *ramada* is *salia*; but the two insects are abundantly distinct.

SALIA group.

38. ADOLIAS SALIA.

♂ ♀. *Adolias salia*, Moore, Trans. Ent. Soc. London, p. 69, pl. 4, fig. 4 (1859).

Java (*Moore*).

Java, ♂ ♀, B.M.

39. ADOLIAS DECORATUS. (Plate XLV. figs. 2 & 9.)

♂. *Alæ supra fuscae; anticæ costa virescente, characteribus consuetis basalibus, fascia irregulari hastata discali viridi lituras maculares fuscas includente, albo extus limitata et fusco marginata, extra squamis fusco pallidis submarginata; posticæ fascia regulari apud apicem nivea a linea lunulari extus limitata, ad apicem lunulis tribus violaceis extus marginata, area anali quadrata æneo-viridi: subtus omnes flavescens, fascia communi æneo-albida, apice anticarum æneo-viridi.*

♀. *Alæ multo majores, supra fuscae, fascia multo latiore albicante et in posticis intus magis irregulari; subtus fascia velut supra viridi, opalescente fusco marginata; area basali flava, characteribus nigro-fuscis; margine externo omnino ad fasciam albido opalescente: corpus supra fuscum, subtus album.*

Exp. alar. ♂, unc. $2\frac{5}{8}$, ♀, $2\frac{7}{8}$.

Singapore (six specimens).

♂ ♀, Coll. Roberts.

Allied to *A. salia*, but very distinct; the underside of the male much like that of *A. bipunctata*, Vollenhoven.

40. ADOLIAS BIPUNCTATA.

♂. *Adolias bipunctata*, Vollenhoven, Tijdschr. voor Ent. p. 191, n. 11, pl. 10. fig. 4 (1862).

♂, Borneo (*Vollenhoven*).

Allied to *A. salia*.

CLATHRATA group.

41. ADOLIAS CLATHRATA.

♂. *Adolias clathrata*, Vollenhoven, Tijdschr. voor Ent. p. 105, n. 38. pl. 12. fig. 5 (1862).

♂, Borneo (*Vollenhoven*).

Seems almost to unite the *Salia* and *Cocytus* groups; it comes nearer to the latter.

COCYTUS group.

42. ADOLIAS JAPIS.

♂. *Adolias japis* (Godart), Lucas, Hist. Nat. Lep. Exot. pl. 69. fig. 1 (1835); ♀. Moore, Trans. Ent. Soc. p. 73. n. 21 (1859).

Java (*Moore*).

Java, ♂ ♀, B.M.

Race. *Alæ maris supra fascia communi nivea violaceo partim marginata (nec cæruleo inclusa), feminae obscuriores et fascia communi tenuiore quam in forma typicali.*

Java, ♂ ♀, B.M.

43. ADOLIAS ASOKA.

♀. *Adolias asoka*, Felder, Reise der Novara, p. 433. n. 694, tab. 58. fig. 1 (1867).

Malacca interior (*Castelnau*).

Borneo, Coll. Felder.

This species seems nearly allied to *japis*, ♀, of Godart.

44. ADOLIAS VACILLARIA, sp. n. (Plate XLV. fig. 1.)

♀. *Affinis A. asokæ Malaccæ; alæ supra fusca, lineis consuetis basalibus obscurioribus; anticæ fascia sexmaculari nivea, maculaque apud apicem, fascia diffusa obscure fusca ab apice ad marginem anali-internum posticarum currente, in anticis intus squamis cæruleis, extus apud angulum ani maculis squamosis violaceo-albidis marginata; posticæ punctis duobus submediis, linea lunulari discali obscure fusca extus maculas septem violaceo-albidis cingente, intus apud apicem maculis quatuor niveis quadrato-lunatis limitata: subtus omnino pallidiores, area basali flavescente lineis lunulatis distinctis; maculis albis anticarum velut supra, posticarum obsoletis: corpus supra fuscum, subtus pallide flavescens.*

Exp. alar. unc. 3.

Borneo.

♀, B.M.

Allied to *asoka* of Felder, but very distinct.

45. ADOLIAS COCYTUS, sp. n. (Plate XLV. figs. 3 & 10.)

♂. *Pap. cocytus*, Fabricius, Mant. Ins. p. 29. n. 316 (1787).♀. *Affinis A. vacillariæ, at supra characteribus fere aphidæ (Hewits.); anticæ maculis velut in vacillaria at minoribus et fusciscentibus velut in asoka, linea media velut in vacillaria at distincte nigrescente: area apicali anticarum omnino virescente: posticæ lunulis tribus submarginalibus apicalibus nigris, squamis albidis circumcinctis.**Alæ subtus omnino flavidæ, anticæ disco toto læte flavescente; linea alis ambabus lunulari submarginali nigro-fusca: maculis anticarum supernis niveis fusco cinctis: posticæ linea angulariter arcuata discali fuscescente, characteribus basalibus consuetis: corpus supra fuscum, subtus flavescens.**Exp. alar. unc. 2 $\frac{5}{8}$.*

Siam (a collectione Banksii).

B.M.

The Fabrician type is in the Banksian collection, and, as I have stated in the 'Annals of Natural History' (Jan. 1868), has no connexion with the *cocytus* of recent authors.♀. Above much like a small *aphidas* in pattern, but with the apical area covered with greenish scales; below it is also somewhat like that species, but the hind wings are differently coloured and the bands distinct. In form it differs considerably, the front wings being strongly falcate and the hind wings with the anal area produced.

46. ADOLIAS GOPIA.

♀ as ♂. *Adolias gopia*, Moore, Trans. Ent. Soc. London, p. 73, pl. 5. fig. 4 (1859). Assam and (?) Fiji Islands, ♂ ♀, B.M.

47. ADOLIAS AMBALIKA.

♀. *Adolias ambalika*, Moore, Trans. Ent. Soc. London, p. 74, pl. 5. fig. 3 (1859).♂. *A. ambalika*, Butler, Ann. & Mag. Nat. Hist. i. p. 98. n. 4 (Feb. 1868).

Borneo (Moore).

Borneo, ♂ ♀, B.M.

48. ADOLIAS GANDARVA.

♂ ♀. *Adolias gandarva*, Vollenhoven, Tijdschr. voor Ent. p. 199. n. 29, (♀) pl. 11. fig. 4 (1862).*Hab. —?*Allied to *A. diardi*, but seems distinct; the male described probably belongs to another species.

49. ADOLIAS DIARDI.

♀. *Adolias diardi*, Vollenhoven, Tijdschr. voor Ent. p. 188. n. 8, pl. 10. fig. 2 (1862).♂. *A. diardi*, Butler, Ann. & Mag. Nat. Hist. i. p. 98. n. 5 (1868).

♀, Borneo (Vollenhoven).

Borneo, ♂ ♀, B.M.

50. ADOLIAS BLUMEI.

♂. *Adolias blumei*, Vollenhoven, Tijdschr. voor Ent. p. 204. n. 30, pl. 12. figs. 3, 4 (1862).

♀. *A. blumei*, Butler, Ann. & Mag. Nat. Hist. i. p. 98. n. 2^a (1868).

♂, Java (*Vollenhoven*). Borneo, ♂ ♀, B.M.

51. ADOLIAS COCYTINA.

♂. *Adolias cocytina*, Horsfield, Zool. Journ. p. 67, pl. 4. figs. 3, 3^a (1829-30); ♀. Butler, Ann. & Mag. Nat. Hist. i. p. 99. n. 6 (Feb. 1868).

♂. *A. godartii*, G. R. Gray, List Lep. Nepal, p. 14, tab. 12. fig. 2 (1846).

♀. *A. mitra*, Felder, Reise der Novara, iii. p. 433. n. 695 (1867).

♂, Sumatra (*Horsfield*). Sumatra, ♂ ♀, B.M.

52. ADOLIAS LUDEKINGII.

♀. *Adolias ludekingii*, Vollenhoven, Tijdschr. voor Ent. p. 189. n. 9, pl. 10. fig. 3 (1862).

♀. Sumatra (*Vollenhoven*).

This is a local representative of *monina*, Fabr. (*puseda*, Moore), and comes between it and *cocytina*. The male will doubtless be difficult to determine.

53. ADOLIAS MONINA. (Plate XLV. fig. 4.)

♂. *Pap. monina*, Fabricius, Mant. Ins. p. 51. n. 502 (1787), *linea supramarginali latiore nigerrima*.

East India (*Fabricius*). East Indies, ♂, B.M.

♂ (race). *A. cocyta*, Fabr. Ent. Syst. iii. pt. 1. p. 127 (1793).

♀. *A. puseda*, Moore, Trans. Ent. Soc. p. 71, pl. 6. fig. 5 (1859).

Penang (*Moore*).

Singapore, Penang, ♂ ♀, B.M.

I have examined thirty-five specimens of both sexes in Lieut. Roberts's collection. The form *monina*, ♀, only differs in the more strongly marked coloration of the under surface.

54. ADOLIAS LEPIDEA.

♂ ♀. *Adolias lepidea*, Butler, Ann. & Mag. Nat. Hist. i. p. 71 (1868).

♂ ♀, Northern India. ♀ var., Southern India, B.M.

This species has been most minutely described in German by Prittwitz (Stett. ent. Zeit. 1867) as the *cocytus* of Fabricius:

TELCHINEA group.

55. ADOLIAS TELCHINEA.

♂. *Adolias telchinea*, Ménétrés, Cat. Léop. Mus. St. Pétersb. pt. 2. t. 9. fig. 3 (1857).

♀. *Adolias aphidas*, Hewitson, Exot. Butterf. iii. p. 60, pl. 30. fig. 8 (1862).

♂, Northern India (*Ménétriés*). Mus. Imp. Acad. St. Petersburg.
 ♀, East India (*Hewits*). Nepal, ♀, B.M.

56. ADOLIAS SEDEVA.

♀. *Adolias sedeva*, Moore, Trans. Ent. Soc. London, p. 68, pl. 4.
 fig. 3 (1859).

♂. *Adolias adima*, id. ibid. p. 76. n. 29 (1859).

♂ ♀, Assam (*Moore*). Assam, ♂ ♀, B.M.
Sedeva is not the female of *apiades*; the latter has no large white spots upon the upper surface of the wings.

57. ADOLIAS SANANDA.

♂. *Adolias sananda*, Moore, Trans. Ent. Soc. London, p. 76, pl. 7.
 fig. 3 (1859).

♂, Assam (*Moore*). Silhet, ♂, B.M.

58. ADOLIAS JAHNU.

♀. *Adolias jahnu*, Moore, Trans. Ent. Soc. London, p. 74. n. 24,
 pl. 7. fig. 1 (1859).

♂. *Adolias belarama*, Moore, Proc. Zool. Soc. London, p. 766,
 pl. 41. fig. 3 (1865).

♀, Darjeeling, ♂, North India (*Moore*). Silhet and Darjeeling,
 ♂ ♀, B.M.

♂ var. *Alæ posticæ maculis subquatuor squamiformibus cæruleis
 marginalibus apud angulum ani.*

Silhet. ♂, B.M.

59. ADOLIAS APIADES.

♂. *Adolias apiades*, *Ménétriés*, Cat. Léop. Mus. St. Pétersb. pt. 2.
 t. 9. fig. 4 (1857); also of Moore.

♀. *Alæ supra fulvo-fuscæ strigis consuetis basalibus, lineis
 duabus subdiffusis fuscis undatis discalibus continuis, ambabus
 apud apicem anticarum albido quadripunctatis: alæ subtus
 fere velut in A. jahnu coloratæ; alæ autem anticæ forma om-
 nino distant.*

Darjeeling (*Ménétriés*). Darjeeling, ♂ ♀, B.M.

60. ADOLIAS XIPHIONES, sp. n. (Plate XLV. fig. 6.)

♂. *Affinis A. apiadi minor, supra obscurior castaneo-fusca lineis
 anticarum discalibus magis approximatis; posticæ fascia mar-
 ginali viridi multo latiore: anticæ subtus basi flavescens,
 punctis apud apicem albicantibus; posticæ fundo toto flavo,
 maculis areæ analis cæruleo cinctis, aliter velut in apiade:
 corpus supra fuscum, subtus albidum.*

Exp. alar. unc. 2 $\frac{6}{8}$.

Moulmein. ♂, B.M.

Allied to *apiades* and *jahnu* ♂, but differing considerably from both.

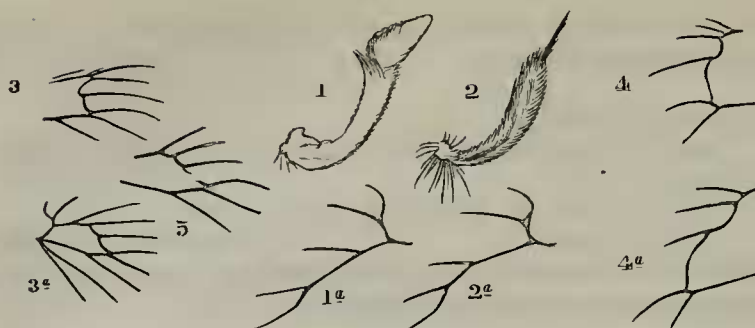


Fig. 1. Palpus of *Adolias aconthea*.

1 a. Subcostal branches of ditto (h. w.).

2. Palpus of *Tanaëcia pulasara*.

2 a. Subcostal branches of ditto (h. w.).

3, 3 a. Neurulation of *Stibochiona*.

4, 4 a. Neurulation of *Neurosigma*.

5. Rudimentary lower discocellular in *D. nesimachus*.

TANAËCIA, g. n.

Typical species *Tanaëcia pulasara*.

Sexes nearly alike; the palpi with a slender bristle-like terminal joint, varying somewhat in length in the different species; the middle discocellular of front wing feebly recurved; the first branch of the subcostal nervure in hind wing emitted at some distance from the base, the second just beyond.

1. TANAËCIA CALLIPHORUS.

♂. *Adolias calliphorus*, Felder, W. e. M. v. p. 302; Hewitson, Exot. Butterf. iii. p. 61, pl. 31. fig. 9 (1863).

Luzon (Felder).

Philippines, ♂, B.M.

2. TANAËCIA VALMIKIS.

♂ ♀. *Adolias valmikis*, Felder, Reise der Novara, p. 434. n. 697 (1867).

Borneo (Felder).

Id. ? Borneo, ♂ ♀, B.M.

Larger than the nearly allied *arana*, Felder (*pardalis*, Vollenhoven).

3. TANAËCIA APSARASA.

♀?. *Adolias apsarasa*, Vollenhoven, Tijdschr. voor Ent. p. 198. n. 18, pl. 11. fig. 3 (1862).

Borneo (Vollenhoven).

Most nearly allied to *A. valmikis*, Felder, but quite distinct.

4. TANAËCIA SUPERCILIA, sp. n. (Plate XLV. fig. 7.)

♂. *Valde affinis* T. *varunæ*; *alæ supra velut in* T. *pelea coloratæ*, *at fascia posticarum lunulari magis arcuata et characteribus basalibus punctiformibus: alæ subtus pallide fuscæ, area interno-basali anticarum flavescente, fascia sericeo-albida discali, maculis posticarum latioribus nigris: aliter velut in varuna.*

Exp. alar. unc. 2 $\frac{1}{2}$.

Penang.

♂, Coll. Roberts.

A local representative of *T. varuna*. Lieut. Roberts has assured me that the nearly allied species of the *Adolias* group are quite constant to their localities; otherwise I should have considered this to be a variety of *varuna*.

5. TANAËCIA VARUNA.

♀. *Adolias varuna*, Vollenhoven, Tijdschr. voor Ent. p. 195. n. 16, pl. 10. fig. 6 (1862).

♂. *Ala supra velut in fœmina, subtus fere velut in lutala* ♂.

Java (*Vollenhoven*).

Singapore, ♂, B.M.

This, though very closely allied to *lutala*, seems a good and constant species. In the collection of Lieutenant Roberts there are ten males and five females, not varying at all, from Singapore. The under surface of the wings differs considerably in the opposite sexes.

6. TANAËCIA ARUNA.

♂. *Adolias aruna*, Felder, Wien. ent. Monatschr. n. 24 (1859).

♂. *Adolias pardalis*, Vollenhoven, Tijdschr. voor Ent. p. 197. n. 17, pl. 11. fig. 5 (1862).

♂, Java (*Vollenhoven*); ♂, Malacca (*Felder*).

This seems very nearly allied to *varuna*.

7. TANAËCIA LUTALA.

Adolias lutala, Moore, Trans. Ent. Soc. p. 71, pl. 6. fig. 3 (1859).

Borneo (*Wallace*).

Borneo, ♂, B.M.

8. TANAËCIA TRIGERTA.

♂. *Adolias trigerta*, Moore, Trans. Ent. Soc. London, p. 72, pl. 5. fig. 2 (1859).

Java (*Moore*).

Java, ♂ ♀, B.M.

The third joint of the palpi in this insect is very short, but needle-like as in the other species.

9. TANAËCIA PELEA.

♂. *Papilio pelea*, Fabricius, Mant. Ins. p. 53. n. 523 (1787).

♂. *Adolias palguna*, Moore, Trans. Ent. Soc. London, p. 70, pl. 6. fig. 1 (1859).

♀. *Coloribus fere maris, alis autem forma et magnitudine lutalæ* ♂.
"In India" (*Fabricius*); ♂, Java (*Moore*). Java, ♀, B.M.

10. TANAËCIA PULASARA.

♂ ♀. *Adolias pulasara*, Moore, Trans. Ent. Soc. London, p. 71, (♂) pl. 6. fig. 3 (1859).

Malacca, Singapore, Penang (*Moore*). Malacca, India, ♀, B.M.

I have examined eight specimens of both sexes, taken by Lieut. Roberts in Malacca. The species appears scarcely to vary, although one male individual in this collection has the external area of all the wings unusually white.

♀. *Adolias indras*, Vollenhoven, Tijdschr. voor Ent. p. 194. n. 15, pl. 11. fig. 2 (1862).

♀, Borneo (*Vollenhoven*).

This is only the Bornean form of Moore's *pulasara*, from which it seems to differ in the paler margin to the wings, with one or two other minute and insignificant discrepancies.

11. TANAËCIA VIOLARIA, sp. n. (Plate XLV. fig. 8.)

♀. *Alæ supra fuscæ; anticæ velut in pelea, at margine toto fusco; posticæ fascia lunulari ad angulum ani increscente submarginale apud apicem lunulis niveis, apud angulum ani purpureis, a lunulis fuscis intus limitatis, extus a maculis sagittatis fuscis extra albido terminatis præcipue apud apicem.*

Alæ subtus velut in pulasara, at area basali fusco-flavida (nec ochreo-albida) sagittisque posticarum violaceis et longioribus.

Exp. alar. unc. 3 $\frac{1}{4}$.

Singapore.

♀, Coll. Roberts.

Allied to *vikrama*, Felder, but very distinct.

12. TANAËCIA VIKRAMA.

♂. *Adolias vikrama*, Felder, Reise der Novara, p. 433. n. 696 (1867).

Sumatra (*Wallace*).

Sumatra, ♂, B.M.

Closely allied to *A. pulasara*.

Genus SYMPHÆDRA, Hübner (1816).

DIRTEA group.

1. SYMPHÆDRA ARETES.

♂ ♀. *Adolias aretes*, Hewitson, Exot. Butterf. ii. p. 69, (♂) pl. 35. figs. 1, 2 (1861).

Celebes (*Hewitson*).

Celebes, ♂ ♀, B.M.

Var. ♂. *Alæ posticæ fascia præocellari discali obsoleta.*

Celebes, ♂, B.M.

2. SYMPHÆDRA CANESCENS, sp. nov. (Plate XLV. fig. 5.)

♀. *Affinis S. areti ♀, minor, fascia autem anticarum discali maculari alba et ad basin continuata, fasciaque postmedia obliqua (in arete, furca solum fasciæ discalis) a punctis duobus albis substituta, fascia marginali ad angulum analem albicante; maculis posticarum majoribus, cincturis tenuioribus flavidis, intus ad angulum ani albicantibus, maculis flavis pallidioribus.*

Alæ subtus multo pallidioribus, aliter velut supra: corpus supra fuscum flavido maculatum, subtus flavido-fuscum.

Exp. alar. unc. 3 $\frac{5}{16}$.

Borneo.

♀, B.M.

Nearly allied to *aretes*, but formerly looked upon as a variety of *dirtea*.

3. SYMPHÆDRA DIRTEA.

♀. *Pap. dirtea*, Fabricius, Ent. Syst. iii. pt. 1. p. 59. n. 184 (1793), but not of Hewitson.

♀. *Adolias boisduvalii*, G. R. Gray, List Lep. Nepal, p. 12, tab. 10. fig. 1, (*dirtea* ♂) fig. 2 (1846).

Bengal (*Fabricius*).

Silhet, Java, Sumatra, ♂ ♀, B.M.

Local race. *Alis minoribus obscurioribus, antennis fulvo acuminatis*.
Borneo. ♂ ♀, B.M.

4. SYMPHÆDRA CYANIPARDUS.

♂. *Alæ supra simillimæ* S. dirteæ, majores, punctis autem anticarum basalibus viridi-albidis nec fulvo-aureis, fasciaque marginali subobsoleta diffusa, punctis duobus distinctis subapicalibus niveis; posticæ fascia violaceo-viridi intus regularius dentata, venis haud cinereo acuminatis: subtus maculis omnibus distinctissimis viridi-albis, fundo olivaceo-viridi nec fulvo-ferrugineo, punctis posticarum obscuris submarginalibus vix distinguendis.

♀. *Adolias dirtea*, Hewitson in Gen. Diurn. Lepid. pl. 44. fig. 1 (1850).

Silhet.

♂ ♀, B.M.

Local race. *Antennæ utroque sexu fulvo acuminatæ; femina alis supra paulo magis virescentibus.*

Borneo.

♂ ♀, B.M.

5. SYMPHÆDRA IMPERATOR.

♀. *Adolias imperator*, Hewitson, Exot. Butterf. iii. p. 62, pl. 31. fig. 10 (1863); *A. imperialis* in Index.

Luzon (*Hewitson*).

♀, Coll. Boisduval.

6. SYMPHÆDRA NINUS.

♀. *Adolias ninus*, Felder, Wien. ent. Monatschr. 1859; Reise der Novara, pt. 3. tab. 58. figs. 4, 5 (1867).

Ambonia (*Doleschall*); Ceram (*Wallace*).

Coll. Felder.

Comes into the *Dirtea* group.

7. SYMPHÆDRA? ACTION.

♀. *Adolias action*, Hewitson, Exot. Butterf. iii. p. 59, pl. 30. figs. 6, 7 (1862).

Aru Islands.

Coll. A. R. Wallace.

Mr. Hewitson says that this species has the discoidal cell of the front wing closed, but that of the hind wing open.

ÆROPUS group.

8. SYMPHÆDRA PANOPUS.

♂. *Adolias panopus*, Felder (W. e. M. v. p. 302, 1861); Reise der Novara, iii. tab. 58. figs. 2, 3 (1867).

Luzon (*Felder*).

♂, Philippines, B.M.

Described originally as a species of *Lexias*, Boisd. Gen. (= *Symphædra*). The structural characters which separate *Symphædra* from *Adolias* are not very considerable, and from their uncertainty seem almost to indicate a state of transition; the style of coloration, however, is quite distinct.

DICHORRAGIA, g. n.

Typical species *Dichorragia nesimachus*.

Most nearly allied to *Apatura* (*A. erminia*), but differing slightly in the neuration, the hind-wing cell being partially closed by an interrupted and rather delicate lower discocellular nervule. In colouring the type more nearly resembles *Symphædra cyanipardus* ♀ than anything else, which probably accounts for its retention in *Adolias*.

DICHORRAGIA NESIMACHUS.

Adolias nesimachus, Boisduval, in Cuvier's Règn. An. édit. Crochard, Ins. t. 139. fig. 1.

Northern India.

♂ ♀, B.M.

STIBOCHIONA, g. n.

Typical species *Stibochiona coresia*, Hübner.

Allied to *Diadema* (*D. alimena*), but differing from it, from *Apatura*, and from *Adolias* in having the discoidal cells of both wings distinctly closed, the middle and lower discocellulars of front wing forming a continuous arch, the upper discocellular of hind wing obliquely arched, the lower a little longer than the upper, slightly arched, and meeting the median nervule somewhat obliquely at the origin of the second and third branches. Colours intermediate between *Adolias cocytus* and *Diadema alimena*.

1. STIBOCHIONA NICEA.

Adolias nicea, G. R. Gray, List Lep. Nepal, p. 13, t. 12. fig. 1 (1833).

Adolias dolope, Felder, Wien. ent. Monatschr. iii. sp. 8 (1859).

Darjeeling (*Moore*).

Northern India, ♂ ♀, B.M.

♂ var. *Minor*, *punctis distincte viridibus nec cæruleis*.

Northern India.

♂, B.M.

2. STIBOCHIONA CORESIA.

♀. *Hypolimnas coresia*, Hübner, Exot. Schmett. Band ii. tab. 46. figs. 3, 4 (1806).

♂. *Adolias apaturina*, Horsfield, Zool. Journ. v. p. 68, pl. 4. figs. 1, 1^a (1835).

Java.

♂ ♀, B.M.

The type of the genus *Hypolimnas* is a *Diadema*, so that that term cannot be adopted.

NEUROSIGMA, g. n.

Typical species *Neurosigma siva*.

Nearly allied to *Romalæosoma*, of which it is probably the eastern representative; it differs, however, in neuration.

Body, palpi, and antennæ formed and coloured as in *Romalæosoma*; the wings coloured as in some Eastern species of *Argynnis*: the discoidal cells closed; the upper discocellular of front wings extremely minute; the middle short and transverse; the lower long, transverse, and gently waved, meeting the third median nervule close to the origin of the second; the upper discocellular of hind wings short and arched inwardly; the lower long, arched outward, slightly angulated in the centre, and meeting the third median nervule just beyond the origin of the second.

NEUROSIGMA SIVA.

Adolias siva, Westwood, Cab. Orient. Ent. p. 76, tab. 37. fig. 4 (1847).

Nepal.

♂ ♀, B.M.

Adolias confinis of Felder (Wien. ent. Monatschr. iii. p. 182, taf. 4, 1859) is identical with *Abrota jumna*, Moore, not *A. ganga*, as stated by Gerstaecker.

DESCRIPTION OF PLATE XLV.

Fig. 1. *Adolias vacillaria*, Butl., p. 606.

2 & 9. — *decoratus*, Butl., p. 605.

3 & 10. — *cocytus*, Fabr., p. 607.

4. — *monina*, Fabr., p. 608.

5. *Symphædra canescens*, Butl., p. 612.

6. *Adolias xiphioncs*, Butl., p. 609.

7. *Tanaëcia supercilia*, Butl., p. 610.

8. — *violaria*, Butl., p. 612.

9. On Pelagic Shells collected during a voyage from Vancouver Island to this country. By Commander HUGH H. KNOCKER, R.N., C.M.Z.S.

Having lately returned, in command of H.M.S. 'Alert,' from the Pacific, where I had been sent to bring home that vessel (I found her at Esquimalt in September 1867), I now beg to send, for the information of the Zoological Society, a sketch of my researches in pelagic shells during my passage home.

I conceived the idea on leaving Vancouver that, as I was going to pass through the four great oceans (viz. North and South Pacific, and South and North Atlantic), I might usefully try by the tow-net if it were possible to determine where the several species began and terminated, or whether they ran throughout the whole, or parts only, of these vast extents of water; and by the Table herewith sent it will be seen with what success.

